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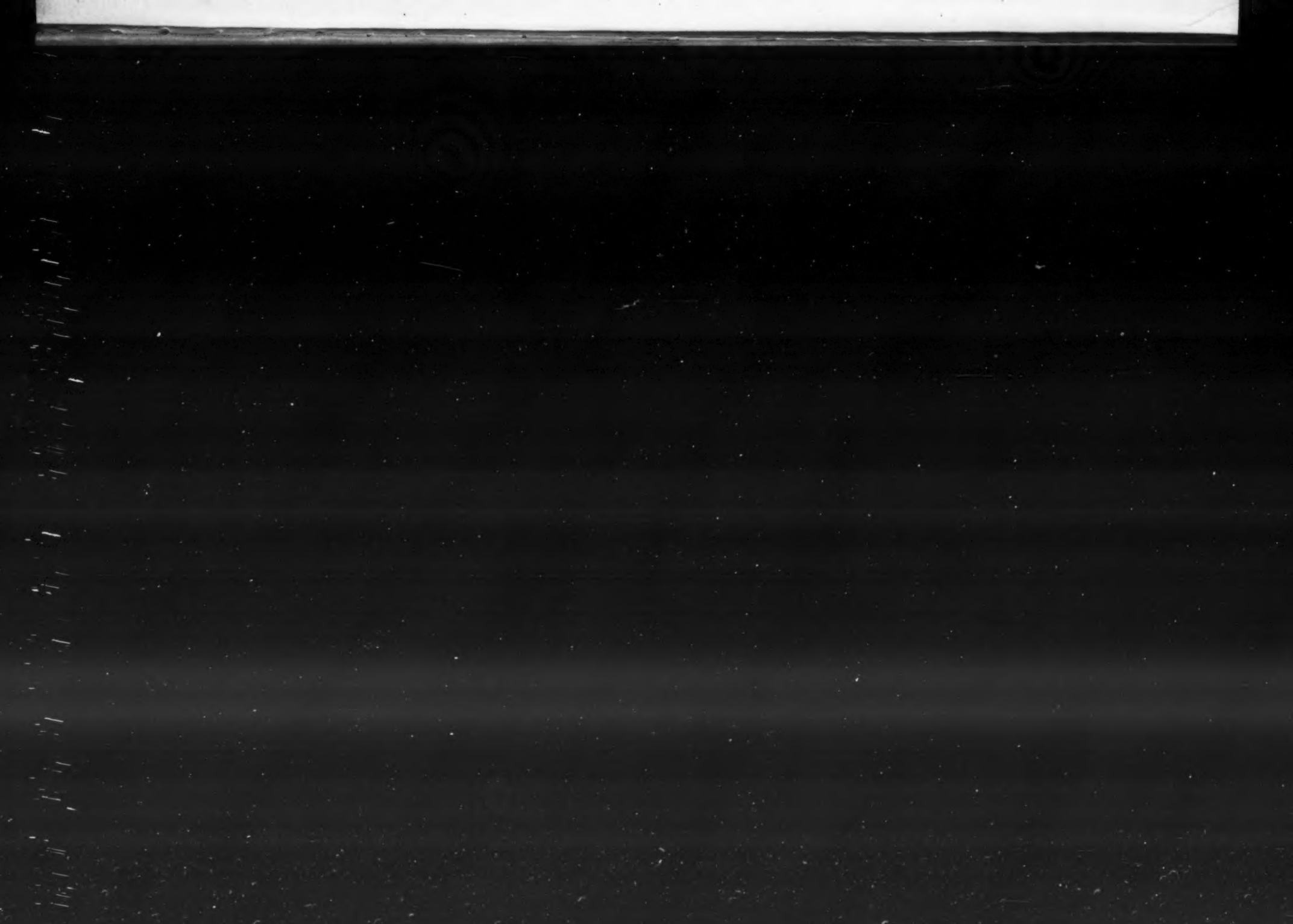

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THE WASHING OF BRAZILIAN RUBBER.

THE standardizing of Brazilian crude rubber sorts is something that has often been discussed. No special progress has been made, however, and the trade designations have remained loosely descriptive or wholly arbitrary. There has never even been formulated a clear descriptive paragraph that would adequately describe Up River Fine.

That it is a pity to pay freight on water, bark, chips, sand and other worthless contents of crude rubber pelles, slabs and balls, no one doubts, *but*—and this is a very large but—how is the washing of all of the 42,000 tons of Brazilian rubber going to be viewed by the parties most interested—the rubber manufacturers? They are equipped with washing and drying plants that cost hundreds of thousands of dollars. They are accustomed to judge the rubber by certain physical characteristics. They know its value for various lines of goods by these characteristics. If the rubber all comes to them in crepe form it means not only the scrapping of much valuable machinery, but involves the testing of every grade in the laboratory, in compounding, vulcanization, and in actual use. It is by no means certain that Fine Pará rubber, for example, washed in Manáos, will arrive in New York possessed of the same degree of nerve that it shows when it comes in biscuit form. The generally accepted explanation of the superior nerve of Pará biscuits is that the constant pressure of the stretched and superimposed films, together with the water held in the mass, are responsible for this superiority. With some of the softer sorts like Mangabeira, washing, particularly clean washing, tends to soften the rubber so that it deteriorates.

All of these points were put before the Minister of Agriculture at Rio de Janeiro recently by the editor of The India Rubber World, who was given an audience for that special purpose. His Excellency, however, gave his assurance that nothing would be done hastily and that sample lots of all kinds would be shipped for examination before any grade was definitely changed.

A point in favor of the bid for the plant in Manáos is the comparative cheapness of the price charged—about six cents a pound. This is for washing, sheeting and packing in boxes. The present price for cutting and boxing is over 20 cents a pound. In this connection it might be well to cite the various grades of crude rubber that now come from Brazil. Of the Amazon sorts nearly all of the grades named are still further sub-divided into Fine, Medium and Coarse.

The various grades are as follows: Bolivian, Peru, Acre, Matto Grosso, Amazonas sorts (Javary, Purus, Jurua, Madeira, etc.); Tapajos, Xingu, Islands, Cameta, Weak fine *Hevea* (Rio Negro, Peruvian, Bolivian, Purus, Pará).

Bolivian, Peruvian, Matto Grosso, Acre, Amazonas and Pará caucho.

Ceara sheet and crepe, Jequié sheet, Jequié washed, Jequié scrap, Piauhy rubber, Mangabeira slabs, Mangabeira crepe.

A TROPICAL AGRICULTURAL UNIVERSITY IN THE WEST INDIES.

IN that exceedingly interesting paper on "The Present and Future of the Native *Hevea* Rubber Industry," by Dr. Jacques Huber, which appeared in the March number of The India Rubber World, he made this statement: "It would seem strange that in the Amazon region, the very home of the *Hevea Brasiliensis*, its cultivation has not made more progress, in spite of the many efforts in that direction. The cause is not only in the general conditions of the country and in the scarcity of labor, but perhaps principally in a factor which unfortunately has too often been overlooked—that of management. In Amazonia there

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are practically no plantations on a large scale, and trained plantation managers are seldom to be found there."

The lack of trained experts which Dr. Huber mentions as the chief obstacle in the way of successful rubber plantations in South America is also noticeable everywhere in the rubber field where plantations have been started. To be sure, in the Far East, now that plantation enterprises have been under way for a number of years, there is quite a body of men who have secured a practical training through their experience on the plantations, and there are in various parts of the tropical world experimental stations where a few men, under government auspices, are trying to solve some of the many problems to which tropical agriculture has given rise; but nowhere in the world is there a tropical agricultural college where men may be trained quickly, and without waste of time and effort, in the science of tropical agriculture—whether relating to the production of rubber, sugar, cacao, or tropical fruits; and the pressing need of such an institution has long been felt by intelligent observers. It has been dwelt upon in the agricultural and tropical papers; it has come up for discussion in the conferences of those who are interested in tropical products, and it was particularly emphasized in the West Indian Agricultural Conference held in Trinidad last year.

A new impetus has been given to the subject by an article which appeared in a recent issue of "The London Times," calling attention in an emphatic manner to the need of a tropical agricultural university if the British colonial possessions in the tropics are to reach their proper development. It called attention to the extreme wastefulness of the haphazard methods that at present obtain in agriculture in these colonies, being in fact practically the same methods in vogue half a century ago. The fact was dwelt upon that nature had been looked to to do practically all the work, on the hypothesis that nature produced enough and to spare, and required little assistance from man. But the conditions have changed materially in fifty years, and in order to meet competition from the other parts of the tropical world, and in order to enable the British colonies to attain to anything like their proper development, the time has come for supplying those colonies with a body of men specially trained to meet their requirements.

This editorial in "The Times" has encouraged the advocates of a tropical agricultural college to new efforts, and it certainly is to be hoped that these efforts may soon materialize. Such a college should, as a matter of fact, not only train men for the pursuit of agriculture in the tropical belt, and train them so broadly that after leaving its doors they would be at home in any tropical country—whether the West Indies, South America, Africa, or the Far East—but it should go beyond such training and engage in research work of a character that would be of benefit to the tropics generally. It should not only train men in a thorough understanding of tropical climates and soils and in the sciences of entomology, mycology, botany and chemistry, but it should take up the great number of problems coming under these various classifications that have not yet been solved, but must be solved, if tropical agriculture is to reach its best estate. Such an institution, giving both practical training and engaging in advanced research work would in reality be a university rather than a college.

In regard to the best location for such an institution, "The Times" expresses the belief that the West Indies are best adapted for this purpose, as they are within the tropical belt and yet readily accessible to students from England, and admirably situated as a starting point from which the graduates could go out —either to South America, to Africa, or to the East.

"The Times" does not designate any particular island, but to anyone who has traveled extensively through the West Indies, Trinidad will immediately suggest itself as an ideal location for such an institution. It certainly presents true tropical conditions, being only ten degrees from the equator, and while it is one of the West Indies, it is so close to the South American shore as to be to all intents and purposes a part of that continent. The great Orinoco River draining thousands of miles of tropical country, including forests of rubber, empties almost at its door. Those who gathered there for instruction would pursue their studies under ideal tropical conditions. The foundation for such a university has already been laid in the Imperial Department of Agriculture for the West Indies, which under the executive management of Commissioner Watts has done so much to train men in tropical agricultural knowledge, and has been of such assistance in supplying experts to both government and private enterprises.

Moreover, it is readily accessible, not only to the English, but to Canadians and to the United States;

and it would naturally draw its student supply, not only from the mother country, but from the surrounding islands, from South America and from North America. And herein lies an important feature—the establishment of an institute conveniently at hand, where young men from the United States could be thoroughly equipped for successful agricultural operations, either in foreign lands, or in the American tropical possessions—Porto Rico, the Philippines and the Hawaiian Islands. It is this feature of it that makes this discussion of special interest to Americans. In the Philippines and the Hawaiian Islands we have extremely valuable possessions, but the young man who goes to either one of these islands to seek his fortune goes absolutely unequipped, and has to acquire the knowledge necessary for success through the slow processes of observation and experience. If he could take a three or four years' course in a well equipped tropical agricultural college it would be a wonderful saving of time and energy.

English colonists have been talking about this agricultural institute for many years, but now they are talking about it with greatly increased earnestness. It is to be hoped that it will soon materialize and that its materialization will take place at some spot like Trinidad where it will naturally attract American patronage and support.

While such an institution—a thoroughly equipped tropical agricultural university—would greatly help all the industries of the tropics—the production of sugar, cacao, fruits and the other products of the equatorial belt, it would, undoubtedly, be of the greatest benefit to the industry of rubber planting, which has such tremendous possibilities in a vast territory—some of it belonging to the United States—where as yet hardly a start has been made.

THE ANNUAL LEGISLATIVE RAID ON THE AUTO.

IT is hardly to be expected that any State legislature would close its session without "taking a fall" out of the auto. But the New York legislature during the month of March certainly established the record. Its members introduced twenty different bills placing various prohibitions and penalties on the use of the auto. The very volume of this proposed legislation was its undoing, because it provoked such a storm of protest from the automobile owners of the State—and there are 100,000 of them—and brought so many hundred representatives of various organizations to Albany to voice their objections by personal presence, that the greater part of these laws were buried—temporarily at least—in committee.

But one of the most pernicious of them, affecting the manufacturer and dealer and ultimately the consumer, was rushed through both houses, and that is a law providing for the dating of automobile tires, and reading as follows: "No person or corporation shall manufacture, sell, offer or expose for sale in this State a tire for use on a motor vehicle unless the date when such tire was manufactured shall be impressed or branded upon the material of which such tire is constructed, or otherwise indicated by label securely attached thereto."

This act was introduced a year ago, and after some discussion and amendment disappeared from view. But the Hon. Christy Sullivan, a statesman representing the lower East Side of New York City, penetrated into the legislative mausoleum and brought forth this presumably defunct issue. It was galvanized into life—by what vivifying influences it cannot be stated—and as said above, it was rushed through the Assembly and the Senate, and at present writing lies on the Governor's desk for his action.

The effect of this act would be to reward dishonesty and penalize honesty; for the dealer who had not yet entered upon the ethical life would simply put new tags on old tires and pocket the profits, while the honest dealer would, naturally, want to avoid any tires dated more than two or three months back; and in consequence the manufacturer would be exceedingly careful not to get much of a supply of tires ahead. During the dull months, when he naturally would be making up a stock for the brisker months to come, he would close down and wait till the market revived. The result of this would be, of course, to make the manufacture of tires materially more expensive, and to advance the price proportionately to the consumer.

It is a totally unnecessary piece of legislation, because the guarantee given by practically all important tire makers, covering their best-grade tires, is adequate protection to the consumer that he will get the tire service he is paying for. In addition to this guarantee, it is, of course, a truism to state that every reputable tire maker is quite as anxious to have his product prove satisfactory as the purchaser of that product is. If a maker's tires go wrong the consumer suffers simply to the extent of the one or possibly four tires that he has purchased, but the maker suffers to the extent that his reputation, on which his continued prosperity is based, is seriously damaged. No tire maker of any standing wants his name on tires of an unsatisfactory character.

If this act is signed and becomes a law, the next step logically for our wise legislators to take is to convene in special session, and to pass an act making it compulsory to date the air that is pumped into the tire.

DYNAMITE IN RUBBER PLANTING.

TEN years ago the discussion of the use of dynamite in the development of rubber plantations would have interested only an extremely small number of people in the United States. The consideration of any subject pertaining to rubber planting would have made but a limited appeal to Americans, for the simple and logical reason that aside from a few holders of shares in Mexican ventures, there was no one in this country who felt anything more than an academic interest in the subject of rubber plantations, or anything that pertained thereto.

But all that has now changed. When one American company is developing the largest rubber plantation in the world—investing millions in the enterprise—and when other large manufacturing concerns are sending their agents through the whole rubber belt to make a thorough study of the planting problem, it can no longer be said that Americans have no personal interest in rubber plantations, and the conditions affecting them.

There are, undoubtedly, many readers of this journal, therefore, within our own home borders, who will read with more than a merely general interest, the paper on the use of dynamite on rubber plantations, which Mr. Hamel Smith, editor of "Tropical Life," contributed to the International Rubber Conference, recently held in New York, and which is reproduced in this number.

Our Western farmers who are as alert agriculturists as can be found anywhere, have long used dynamite and other explosives to conquer the soil. Its swift and thorough efficiency strongly commends it to their distinctly modern temperament; and now the Eastern planters are awakening to the fact that a pound of dynamite is worth a dozen men with the hoe. As Mr. Smith points out, it lays hold of the sub-soil, which neither hoe nor plow can touch, and opens it up to the beneficent influences of air and light, letting the water beneath it up and the roots above it down. It is particularly effective in preparing the holes for the actual planting of the trees, as it not only digs the holes but softens and mellows the surrounding earth, so that the new roots can push out into hospitable soil; and its utility as a destroyer of pests—both animal and vegetable—is obvious. It is a safe conjecture that explosives will grow in popularity with the evolution of the rubber plantation.

AMERICAN MANUFACTURERS INVADE BRAZIL.

THIS issue of THE INDIA RUBBER WORLD contains some exceedingly important news regarding the industrial development in the great continent to the south. It is news, moreover, of special interest to American manufacturers, as it relates to the invasion by one of them of the great South American domain. Last year the Government of Brazil enacted certain legislation to induce capital at home and abroad to embark upon manufacturing operations in that country. Among those who responded to this appeal, and responded successfully, was the Goodyear Tire & Rubber Co. This company contemplates the immediate erection of large rubber refining and washing plants at Pará and Manaos and, even more important, of an extensive and completely equipped factory for the manufacture of rubber goods in Rio de Janeiro. These interesting enterprises are described in detail in two articles appearing in this issue, one devoted to the manufacturing plant, the other to the refining and washing plants.

RUBBERS AS LEGAL TENDER.

ENTHUSIASTS as to the ultimate destiny of rubber are prepared to believe that it can be and will be utilized in multitudinous ways not yet dreamed of, but probably very few of the enthusiasts ever expected that it would take its place with the precious metals as a medium of exchange. This, however, has come to pass, as will be noted by the following paragraph, taken from a paper published in a highly respectable community in New Jersey:

"The young people of the Epworth League of the Methodist Church of this place are going to hold a 'rubber social' in the church Thursday evening, March 27. Admission will be a parcel of old rubbers."

Here is a fine illustration of the doctrine of efficiency, now so loudly heralded, which is as applicable to matter as to energy. To make the useless put on usefulness appeals to the well-balanced, economic mind, and this special instance also shows exceptional financial perspicacity on the part of the leaders of this particular Epworth league; for undoubtedly this New Jersey village, like all other reputable villages, is full of homes where actual cash is scarce, but where old rubbers—too good to throw away and too bad to wear—have been accumulating for years. What more delightful than to tie up an assortment of these old rubbers—some of them having been stored in the garret since the Civil War—and present them at the box office, in exchange for an evening of elevating entertainment? At last rubber has come into its own, and takes its place side by side with gold and silver as a standard of value and a recognized instrument of exchange.

RUBBER MANUFACTURING IN THE "NEW YORK ZONE."

By G. Wilfred Pearce, C.E.

THE year 1912 chronicles the highest volume of trade ever attained in the zone of New York as to sales of manufactures of rubber to the marine, mechanical and electrical engineering interests, and to the building trades. The zone of Greater New York is a radius of twenty miles from the City Hall. The area is 2,345 square miles and the population is almost seven and one-half millions. This zone is growing faster than the nation; New York City alone yearly adds to its population the equivalent of the population of Paterson, New Jersey. Since the opening of the year 1910, the increase in the population of the zone of Greater New York has been as many persons as are accounted for in the last census of Boston. To provide for the wants of the vast population of the zone of Greater New York the manufactures of rubber, calls for the employment of as many rubber trade workers as were employed in the whole domestic rubber industry in 1850.

Accurate statistics of the volume of rubber goods consumption in this zone are not procurable. There is no good reason why manufacturers or jobbers should make known the volume of their sales, and there are cogent reasons why they should not set forth the volume of sales in a community, in which hundreds of promoters are looking for arguments for the flotation of schemes based upon the manufacturing interest. But fairly good estimates of the annual consumption of mechanical trades requirements in manufactures of rubber, are obtainable from the principal designing and constructional engineers. Judging from what the principal local scientific engineers set forth as estimates as to the consumption of all kinds of rubber manufactures bought by final consumers for use within 25 miles of the City Hall, and under specifications which cover the twelve months of 1912, the sum is not under $3,000,000. This sum does not include an estimate of the purchases by thousands of janitors and tens of thousands of householders, concerning which statistics are not collectable.

Thirty-four millions of our population reside at places that are reached by watercraft documented at New York and adjacent ports. These vessels consume largely both staple and special manufactures of rubber, and in addition to this trade, the local marine engineering outfitters are doing a yearly increasing trade with many of the almost 12,000 foreign steamships that come to this port in a year.

So much is printed by the daily press as to the alleged decay of our mercantile marine, and the necessity for Federal aid to nurse our ocean carrying trade, that the general public takes it for truth, whereas our coastwise, river and lake shipping interest is enormous in tonnage, and, for the most part is paying good profits to the owners. In the past twelve-month, our water transportation lines carried two and one-half times as much freight as was carried within the same period by all our steam railroads. Many of our great lines of coastwise, river and lake steam vessels are owned by railroads, and in all that relates to the use of the best grades of mechanical and other rubber wares, these steamship lines are as well circumstanced as the railroad interest is at such plants as the Pennsylvania system's shops at Altoona, Pa., and the plant of the Vanderbilt lines at West Albany. It would be difficult to find anywhere among the storerooms of the greater steamship lines of Europe, a stock comparable in variety and quantity with those maintained at the Great Lakes ports for the one hundred big steamships operated by the United States Steel Corporation. What is shipped from New York City and vicinity in rubber goods to the Great Lakes ship yards, marine engineering works and vessels, aggregates about $750,000 a year, as is estimated by an officer of a local corporation engaged in the manufacture and jobbing of marine engineering supplies. But this amount is not included in the estimate herein given for the annual sales of such wares within the zone of Greater New York.

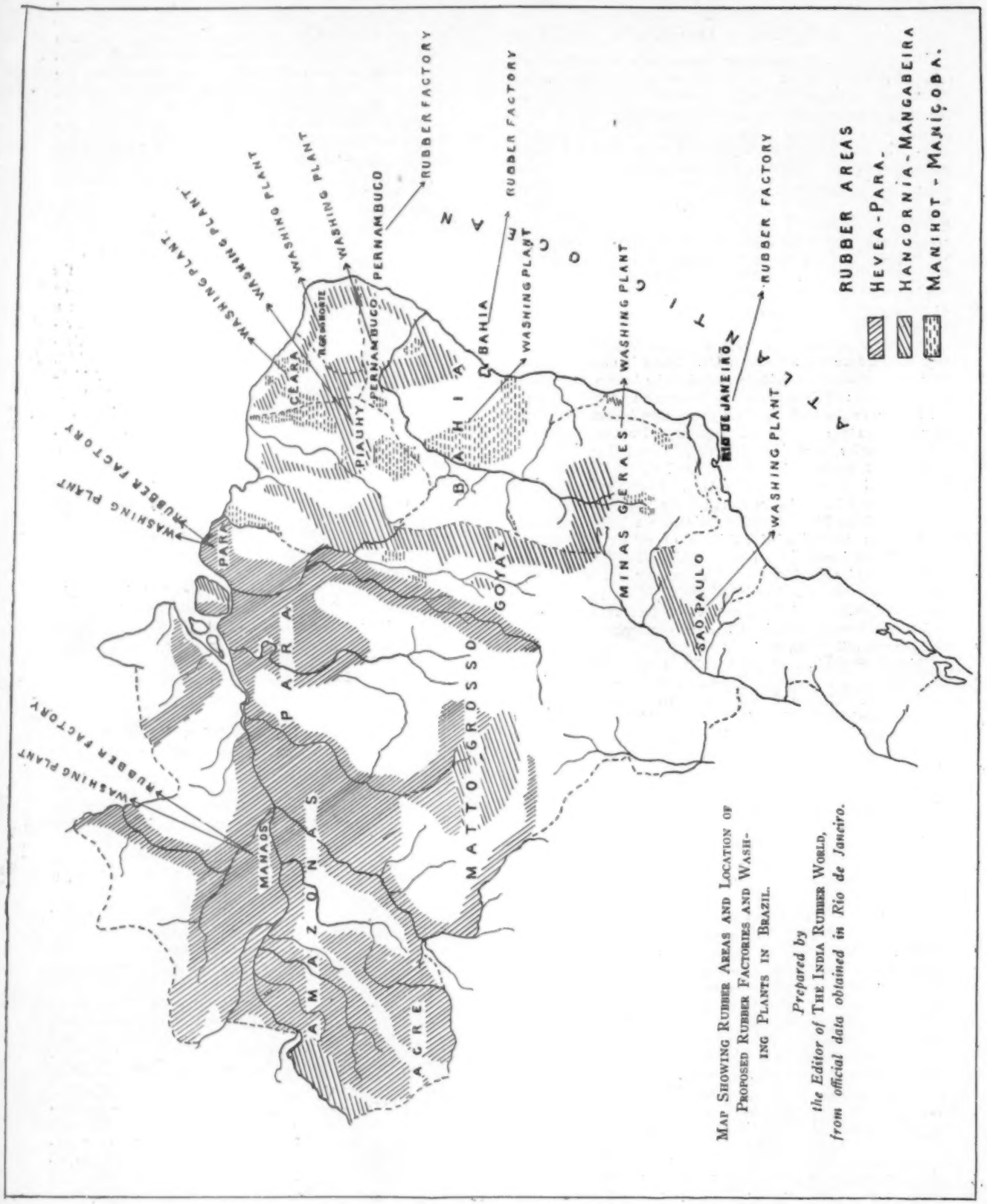
A factor of importance in 1912's local rubber goods trade is the large number of mercantile buildings and apartment houses that were completed, and most of which are so high that the fire engines cannot force water to the upper stories. That fact has developed in Manhattan and parts of Brooklyn, and in parts of adjacent cities, the installment of fire pumps, hose and other fittings for fighting fire by employees of the owners and tenants of the tall structures. So well provided are scores of the new tall mercantile structures, completed on Manhattan Island, with fire-fighting apparatus, and with driven wells beneath the buildings, that upward of 2,500 concerns in the textile industries moved during last year from the downtown wholesale drygoods district to new quarters above Union Square.

For fire hose and hose for vacuum cleansing apparatus, the expenditures by owners of new buildings completed within the zone of Greater New York during 1912, aggregated almost a third more than the sum estimated for the previous twelve-month by conservative mechanical engineers. In the twelve-month, ending with last December there were completed within New York, and in cities within a few miles thereof, 2,687 high-class apartment houses. Few of these cost less than $500,000; many cost upward of $750,000 each. None of these houses is without private fire-fighting equipments. In the larger and most costly of these houses, steam, electric, hydraulic and compressed air power are used, and the resident engineer has under him from six to twenty assistants to care for water, steam heating, refrigerating, power and lighting apparatus. A year's requirements of engineering rubber products for these apartment houses comes to a big sum. Just how much it comes to the sellers do not care to tell. But it is certainly a factor of importance to the trade.

Cheap and good coal from Southern mines, laid down at the port of New York and vicinity at extraordinary low water freight rates, has enormously stimulated manufacturing within this zone, so that it now ranks first in the world in number of employees and value of production. Cheap coal has brought about a number of very large power-producing and selling corporations that sell power much cheaper than any but a very large manufacturing plant can produce it for. One such power-producing plant in this city employs 187 mechanical draughtsmen in designing electrical apparatus and planning electric power installations for users of power.

To take advantage of this low-priced and steady power, many buildings have been especially built hereabouts within a few years, in which manufacturers can rent room and power at low rates. All this results in making this zone a continuously increasing market for a very large sale of rubber wares used in constructural engineering work, and in many lines of manufacture in which rubber goods play a considerable part.

A short time ago it seemed as if the local jobber in rubber goods was being pushed to the wall by manufacturers who employed all arts to reach the consuming interest. Today, the jobbing trade is in good case, and a number of manufacturers have abandoned the solicitation of consumers, and are selling through the engineering trades supply concerns. The jobbers are serving the retailers and final consumers with promptness, and are doing sound educative work in introducing new and improved rubber wares in many lines. By means of the telephone and fast motor wagons these jobbers are filling orders, local and within 20 miles out of town, on very short notice, so that it is no longer necessary for the retail and consuming trades to carry large stocks. Several jobbers within the zone of New York, having accounts with power plants that work day and night, now provide for filling emergency orders at night, by having employes at warehouses all night, who fill orders and rush them off at once by their emergency motor wagons.



Map Showing Rubber Areas and Location of Proposed Rubber Factories and Washing Plants in Brazil.

Prepared by the Editor of The India Rubber World, *from official data obtained in Rio de Janeiro.*

Brazil's New Rubber Activity.

AN AMERICAN COMPANY MAKES TENDERS FOR TWO LARGE REFINING PLANTS.

THE Brazilian legal enactments now in force affecting rubber, consist of the Act of January 5, 1912, in conjunction with the decree of April 17, 1912, explaining and defining the provisions of the former measure. While the fundamental act only acquired legal validity through its being passed by the Brazilian legislature towards the end of December, 1911, its provisions had already been submitted to, and approved by the Rubber Congress held at Rio de Janeiro the previous summer, Being a government proposal, it had been drafted by the Minister of Agriculture, Dr. Pedro de Toledo, who presided over the Rubber Congress and was assured beforehand of a cordial reception on the part of the rubber industry, both wild and cultivated.

During its passage through the Brazilian Legislature it had been subjected to trifling detailed changes, but its terms are

Dr. Pedro de Toledo.

more or less familiar to the readers of The India Rubber World by the extracts in the numbers of October 1, 1911 (page 7); March 1, 1912 (page 266), and June 1, 1912 (page 427).

A thoroughly representative character marked the Rio Congress of 1911, on which occasion a commission of five delegates spent a week in discussing the government proposals, which it subsequently endorsed in the main, and which formed the basis of the two measures of 1912.

That the Brazilian rubber industry was in an unsatisfactory condition was patent to all connected with it. It was costing too much to produce rubber in Brazil, while prices were going down under the influence of the actual and prospective Asiatic yields. Moreover, the latter in their heavy profits had a margin to fall back upon, not existing in the case of Brazilian rubber.

In submitting these proposals to the Rubber Congress Dr. de Toledo urged that they were brought forward in the interests of Northern Brazil generally. In line with the general policy of lowering the cost of producing rubber, was the reduction of the two principal items of expense:—food and transport. These objects have been prospectively attained by the provisions for leasing national lands and for the construction of new railroads.

CONDITIONS OF THE INDUSTRY.

In his presidential address, Dr. de Toledo urged the importance of the rubber industry as a means of support to a considerable section of the population of all the northern states of Brazil. This fact, he added, called for the intervention of the national government, with a view to preventing the occurrence within a few years of a lamentable crisis.

The chief part of the Brazilian rubber production is composed, he explained, of the "Seringueira" (*Hevea* and *Caucho*); growing spontaneously in the valley of the Amazon. In addition to these are the *Maniçoba,* chiefly found on the right bank of the river Parnahyba, and the *Mangabeira,* met with in the states of Goyaz, Minas Geraes and Matto Grasso. The production of the valley of the Amazon would, he said, be sufficient to meet the world's consumption, if that region were worked in an economical and practical manner. This would only be possible with a relatively dense population and with the needed transport facilities.

Most of the *Hevea* rubber is now produced on the banks of more or less navigable rivers, and seldom comes from farther than six miles on either side of the streams. In the northeastern states of Brazil, there is a considerable quantity of *Maniçoba,* though for some reasons its working has not been satisfactory. At the same time, he added, there is no reason why the *Maniçobas* of the northeast should not be rationally exploited and their product as far as possible increased.

PRODUCTION OF BRAZILIAN RUBBER.

The following figures show the production of Brazilian rubber during the five years, 1906-1910, in spite of the existing disadvantageous conditions:

	Tons	Value equalled
1906	34,960	$70,946,000
1907	36,490	72,501,429
1908	38,206	62,785,631
1909	39,027	100,646,651
1910	40,000	125,657,286

DECREES OF JANUARY 5 AND APRIL 17, 1912.

Closely following upon the passing of the government measure by the Brazilian parliament, before the end of the season of 1911, it received the presidential approval by a decree of January 5, 1912. A subsequent decree of April 17, 1912, elaborated its provisions; both statutes now forming part of the Brazilian Federal Code.

The original measure contained 15 articles, while the supplementary decree, which omitted certain formal sections and transposed others, only contained 13.

The former, however, only occupies 6 pages of printed text, while the latter covers about 30 pages, being much more detailed in its provisions. It will therefore be necessary to consider the two measures together.

Of the fifteen articles in the first decree, four were merely formal, while five were indirectly for the advantage of the rubber industry, leaving six articles intended to directly benefit that branch of national commerce.

Those of indirect advantage were the regulations providing for the erection of three hospitals, the construction of new railroads, free admission of products intended to promote river navigation, establishment of coal depots, and measures tending to reduce the cost of provisions. These measures were dealt with in detail by The India Rubber World June 1, 1912, page 427.

Six articles were intended to directly benefit the rubber industry. They were:

Exemption from import duties of appliances for rubber production.

Premiums for new plantations.

Establishment of experimental stations.

Prizes for the establishment of rubber refining plants and rubber goods factories.

Holding of triennial expositions.

Reduction in export duties on rubber.

EXEMPTIONS FROM IMPORT DUTIES OF MATERIALS AND APPLIANCES FOR RUBBER CULTIVATION AND MANUFACTURE.

By the earlier decree free admission was granted to all utensils and materials for the culture of *Hevea, Caucho, Maniçoba* and *Mangabeira* trees, as well as for the collection and preparation of rubber extracted from them. The later decree restricts this free admission to a long list of articles, and includes regulations as to the certificates required of the status of the applicants for such free entry.

In the April decree the provisions of free entry are amplified as follows: "Materials and machinery which shall be discovered or invented during the time this regulation is in force, which have special application to the rubber industry, shall enjoy the same exemption from import duties."

The materials specified for free entry are classified into 4 groups; the fourth one being subdivided into 8 sections. The entire list includes about 400 articles. Its divisions are:

Group 1—Implements and Utensils for the Rubber Gatherer.

Group 2—Implements and materials for Cultivation.

Group 3—Materials and Utensils intended for the culture of trees and treatment of rubber, including building materials.

Group 4—Chemical substances: 1, Coagulants; 2, Dissolvents; 3, Deodorizers and Disinfectants; 4, Coloring materials; 5, Hydrocarburets, heavy bodies and oils; 6, Resin, resinous gums and lacs; 7, Vulcanizing agents; 8, Fibers and Cloth; 9, Insulating materials, and 10, divers materials.

PREMIUMS FOR PLANTING AND REPLANTING.

The scale of premiums to be granted for the planting or replanting of (1) *Hevea*, (2) *Caucho* or *Maniçoba*, and (3) *Mangabeira*, was given in detail in The India Rubber World of June 1, 1912, page 427. For the three broad divisions as indicated, new plantations in groups of 12 hectares (about 30 acres) were to receive awards respectively of: (1) 2,500 milreis ($833); (2) 1,500 milreis ($500) and (3) 900 milreis ($300). Replanting for groups of 25 hectares (about 62½ acres), would entitle the planters respectively to 2,000, 1,000 and 720 milreis ($667, $333 and $240). Under certain circumstances the premiums for *Hevea* rubber may be increased five per cent.

Planters have to submit to the Minister of Agriculture plans of the property it is proposed to cultivate; with details of the nature of the soil and the production for the previous three years, where the property is already under development. The smallest number of trees for new cultures will be 250 per hectare (100 per acre) for *Hevea* and *Caucho*, and 400 per hectare (160 per acre) for *Maniçoba* and *Mangabeira*. In replanting, the distance between the trees should, when possible, be for the former group 20 to 21 feet and for the latter 16½ feet. The premiums will be paid during the year preceding the first crop of rubber, but none will be paid where the trees have been inefficiently treated.

ESTABLISHMENT OF EXPERIMENTAL STATIONS.

The government will establish experimental stations for the study of all the factors in the culture of the rubber produced in the respective regions. For *Hevea* these stations will be at convenient points in the Territory of Acre and the States of Matto Grosso, Amazonas, Pará, Maranhão, Piauhy and Bahia; while those for *Maniçoba* jointly with *Mangabeira* will be in the States of Piauhy, Ceara, Pernambuco, Bahia, Minas Geraes, São Paulo, Goyaz, Parana and Matto Grosso. Planters will be furnished with precise data as to methods and processes for rubber production. The total area of each station will be from 80 to 100 hectares (200 to 250 acres); while each each one will include laboratories and museums. Annual bulletins will be issued of the work accomplished.

The position of director is to be held by a specialist in any one of the technical sections, while the technical positions may be filled by native or foreign professors of recognized ability.

WASHING AND REFINING OF RUBBER.

While it is hoped by means of the various facilities accorded in respect to rubber cultivation to place Brazilian rubber in a better position to compete in the world's markets, the proposals likewise include provisions for encouraging the washing and refining of crude rubber and for the manufacture of rubber goods. Although both subjects are treated in article 4 of the Act of January 5, 1912, and in article 23 of the decree of April 17, 1912, it will probably be simpler to consider them separately.

The premiums offered in respect to rubber refining are:

(1) 400,000 milreis ($133,000) to the first plant established in each of the cities of Belem (Pará) and Manaos, for refining *Hevea* rubber, which reduces the different qualities to a uniform and superior export type.

(2) 100,000 milreis ($33,000) to the first refining plant for *Maniçoba* and *Mangabeira* rubber in each of the States of Piauhy, Ceará, Rio Grande do Norte, Pernambuco, Bahia, Minas Geraes and São Paulo.

In order to have a right to the benefits of this article, the factory must have capital actually employed equal to four times the value of the premium.

Under article 23 of the later decree, there is an exemption from import duties and fees for all materials, machines, utensils and tools necessary for the construction and complete installation of the factory, as well as for all chemical substances, fabrics and various materials, combustibles and lubricants necessary for the operation and maintenance of the factory during a term of 25 years.

Article 24 provides for the formalities of application to the Minister of Agriculture by any one intending to claim these premiums.

The details asked for as to the proposed manufacture illustrate its prospective scope: "A descriptive memorandum in which the capacity of production of the factory is declared, the principal articles intended to be manufactured, the lowest price for which it is proposed to wash and refine rubber, which should be reduced, for each quality, to one superior type for exportation; in general giving the government all the information that will help it to form a correct opinion as to the nature and importance of the projected establishment."

PREMIUMS FOR MANUFACTURE OF RUBBER GOODS.

While the general provisions of the two decrees regarding the washing and refining of rubber equally apply to the manufacture of rubber goods (included in the same article), there are various points specially referring to the latter.

A premium up to 500,000 milreis ($166,000) is given to the first factory of rubber articles which shall be established in Manâos, Belem (Pará), Recife (Pernambuco), Bahia and Rio de Janeiro.

The provision for exemption from import duties on materials and supplies, as shown in the section applying to rubber washing, is evidently also intended to apply to the manufacture of rubber goods. Among provisions apparently referring specially to the latter is the right of appropriating lands required for the development of the factory, and the following clause defining the preference to be received from the government in its purchases: "A preference shown by the government in the purchase of the products used in the service of the army and navy, and the federal public departments, which shall be manufactured by the factories, when they can compete in quality with similar foreign articles—the contract for furnishing of same, arranging every three years with each factory, for those of their products which

were classified in the first place in the triennial expositions at Rio."

Any organization contemplating the erection of one or more of these factories will have to submit to the Minister of Agriculture an application with a general and detailed plan of the factories, an estimate of expenses of first establishment and a descriptive memorandum of the nature and importance of the projected establishment. The company would have to agree in the contract made with the Minister of Agriculture to the clause of reversion at the end of the combined term.

The provision that the capital invested must equal four times the value of the premium evidently applies to both rubber washing and manufacturing factories.

REDUCTION OF EXPORT DUTY ON RUBBER.

Article 12 of the January Act contains the following authority for the Federal Government to make arrangements with certain States and the Territory of Acre for the reduction of export duty upon wild rubber and the exemption of cultivated rubber from that burden:

"The executive power is authorized to enter into an agreement with the States of Pará, Amazonas and Matto Grosso, for the purpose of obtaining an annual reduction of 10 per cent. until the maximum limit of 50 per cent. of the actual value of the export duties placed by the States upon the *seringa* rubber produced in their territories, and the exemption from any export duty, for the space of 25 years, to begin from the date of this law, upon rubber of the same quality and derivation which may be gathered from cultivated plantations.

"At the time the agreement is effected, the executive power shall issue a decree making such reduction which the States may make in the export duty collected on the rubber of the Federal Territory of Acre and conceding an equal exemption upon cultivated rubber."

Export duties being a State prerogative, it was necessary to authorize special negotiations between the Federal Government and the authorities of the several States interested, with a view to the proposed reduction and abolition of export duties.

HOW TO ATTRACT RUBBER GATHERERS.

In discussing the rubber question in the "Boletim" of the Rio Ministry of Agriculture, Dr. Affonso Costa, of that department, has commended the remedial measures lately adopted. He added that the large numbers of rubber gatherers in the immense valleys of the Amazon are nomads and adventurers, who never settle down nor become attached to the soil. To attach them to their work it should be remunerative. The government of the republic will, he remarks, help by establishing centers for the production of alimentary substances throughout the Amazon valley.

PROPOSALS FOR ERECTION OF RUBBER WASHING PLANTS.

Following up the decrees of January 5 and April 17, 1912, which promulgated and explained the measure passed by the Brazilian legislature in the previous December, an announcement was issued by the Federal Government on August 29 last that tenders would be received on December 30 from all persons who may propose to establish any of the factories for the manufacture of rubber goods and for refining rubber, which were referred to in the act already quoted.

The act, it will be recalled, provided for three premiums: $133,000 for the first refining plant for *Hevea* rubber to be established in Pará and Manaos and $33,300 for the first refining plant for *Maniçoba* and *Mangabeira* rubber in certain other States, while a premium equaling $166,000 was allotted to the first factory for the manufacture of rubber goods at certain points.

In the "Diario Official" of February 9 the four following proposals (which had been opened January 31), were reproduced:

1. Goodyear Tire and Rubber Co. of South America; refining plants at Manáos and Pará.

2. G. Chauffour (representing French interests); refining plant at Pará.

3. Luiz Cantanhede de Carvalho Almeida and Arthur Haas; washing and refining plant for *Maniçoba* and *Mangabeira* rubber, on the bank of the river S. Francisco, near the city of Pirapóra, in the State of Minas Gerals.

4. J. D. Leite de Castro; refining plant for *Maniçoba* and *Mangabeira* rubbers in the State of Minas Geraes.

Special interest attaches to the first of these propcsals, it being the only American one, and having been submitted by Mr. J. C. McFadgean, a director of the company who visited Rio for that purpose. He had brought with him credentials, establishing his technical and financial capacity, and had further deposited in the National Treasury government bonds to the value of more than $3,000.

MANAOS AND PARA PLANTS.

The Goodyear proposal closely followed the lines of the government instructions as to details of the proposed works and their prospects of success. It included the erection of two plants at Manáos and Pará, to cost, respectively, $584,503 and $834,937, with an estimated production of 40 and 100 tons per day. The prospective economy of the larger plant is thus demonstrated, and is shown in detail by the subjoined tables A and B, while table C illustrates the proposed mechanical equipment of the two plants.

MANAOS.

BUILDING No. 1 (two floors), 237 x 119 feet, with two wings:

First floor to contain scales, cutting machines, tanks, washing and purifying machines.

Second floor to contain cutting and weighing rooms and five compressors, packing room and analytical laboratory.

BUILDING No. 2 (one floor), 100 x 60 feet, to contain two tubular boilers furnishing steam to building No. 1, as well as small repair shop.

A workmen's village to be provided.

PARA.

BUILDING No. 1 (two floors), 237 x 237 feet, with 4 wings:

First floor to contain scales, cutting machines, tanks, washing and purifying machines.

Second floor to contain cutting and weighing rooms and ten compressors, packing room and analytical laboratory.

BUILDING No. 2 (one floor), 100 x 60 feet, to contain two tubular boilers furnishing steam to building No. 1, as well as small repair shop.

A workmen's village to be provided.

GENERAL FEATURES OF CONSTRUCTION.

The application of the Goodyear company states that the buildings will be constructed of iron combined with cement or brick and cement masonry. Windows and doors are to be of iron. The first floor is to be cemented and the second floor executed in cement with a covering of tiles. Electric light would be used internally and externally. Drains would be provided, as well as a supply of water for drinking purposes and industrial uses.

GENERAL NATURE OF OPERATIONS.

According to the terms of the application, the operations of the company would include the receipt of rubber to be weighed on arrival and after treatment. Each customer's rubber would be treated separately, official inspection being allowed of the refined product, which would be packed in cases of the standard capacity of 220 pounds. The charges would be 3 cents per pound of crude rubber entering the works, with a further charge of three-quarters of a cent per pound of dry rubber after treatment.

PROSPECTS OF THE REFINING INDUSTRY.

In the explanatory portion of the application, the need of full and continuous occupation is urged, as necessary for the profitable operation of the works. To attain this result the whole or a great part of the rubber produced in Brazil would have to pass through the refining works.

The principal value of the plants would be in the establishment of standards, in accordance with which the products would be stamped and classified. Such arrangements, it is urged, would constitute a guarantee, alike for producer and dealer, and would go far to meet the complaints of irregularity brought against Brazilian rubber in foreign markets. The *crux* of the situation is met by the suggestion that the prosperity of the refining plants would be secured by the rubber-producing States imposing higher export duties on rubber lacking in purity than on rubber washed and cleaned. Without such regulations, it is added, refining plants could not make their way, especially in view of the taxes they would have to pay.

Such are the principal features of the proposal of the Goodyear company, which has undertaken, in the event of same being accepted, to begin construction of the plants within six months from the date of contract and to have them in operation within eighteen months.

(A)—ESTIMATE FOR MANAOS PLANT.

The cost of all the buildings and installations (daily production 40 tons) will be as follows:

	Brazilian.	American.
Building No. 1, with 2,610 square meters (about 28,083 square feet) in two floors.	696,000$000	$232,000
Building No. 2, with 554 square meters (about 5,961 square feet) in one floor..	83,100$000	27,700
Worker's village.....	180,000$000	60,000
Machines and installation of power and steam plant	80,000$000	26,666
Refining machinery and installation properly so called.....	520,000$000	173,333
Repair shop and case factory.....	35,000$000	11,666
Contingencies 10 per cent.....	159,410$000	53,138
Total	1,753,510$000	$584,503

(B)—ESTIMATE FOR BELEM (PARA) PLANT.

The cost of all the buildings and installations (daily production 100 tons) will be as follows:

	Brazilian.	American.
Building No. 1, with 5,220 square meters (about 56,160 square feet) in two floors.	1,044,000$000	$348,000
Building No. 2, with 554 square meters (about 5,961 square feet) in one floor..	83,100$000	27,700
Workmen's village	250,000$000	83,333
Machines and installation of power and steam plant	90,000$000	30,000
Refining machinery and installation properly so called.....	775,000$000	258,333
Repair shop and case factory.....	35,000$000	11,666
Contingencies 10 per cent.....	227,710$000	75,905
Total	2,504,810$000	$834,937

(C)—PROPOSED INSTALLATIONS OF MACHINERY.

	Manáos. (Production 40 tons daily)	Pará. (Production 100 tons daily)
Building No. 1 (first floor).		
Scales	2	2
Machines for cutting balls of rubber.....	4	10
Tanks for softening rubber.....	4	10
Washing machines	4	10
Purifying machines	12	30
Second floor.		
Compressors	5	10

BRAZILIAN COMMENTS ON THE GOODYEAR COMPANY'S PROPOSAL.

It is natural, of course, that more or less local opposition should be expected against the entrance of a big American company into the rubber industry of Brazil. Obviously some such opposition is felt, as can be seen from sundry comments in Brazilian papers. Commenting on the proposal of the Goodyear company, for the establishment of rubber refining plants, a correspondent of the "Jornal do Commercio of Rio" specially opposes the suggestion for the rubber producing States to place higher export duties on rubber which had not been cleaned. Such an arrangement, it is urged, would give the Goodyear company a monopoly. Objection is also made to the words "of South America" being used in the title.

In dealing editorially with the subject, the journal questions the assertion that the Manáos plant with the equipment shown could treat 40 tons a day, or the Pará plant 100 tons, placing the output at a much smaller quantity.

A comparison is drawn between the figures of the French proposal and that of the Goodyear company, by which it is shown that the latter claims to be able to turn out 100 tons a day with two boilers, while the former only indicates 27 tons as the prospective daily output with six boilers. It is also questioned at what point a complete washing of the rubber may be considered as having been effected.

By the repeated mention of the three other competing proposals it would seem that these utterances of the journal in question are not unprejudiced, and that they represent the anti-reform sentiments which exist in various forms in Brazil.

AWARDS MADE FOR WASHING PLANTS.

Late advices, received just as this publication goes to press, state that the government awards for washing and refining plants had been made as follows:

For the Manáos plant, to the Goodyear Tire and Rubber Co. of South America.

For the Pará plant, to Gabriel Chouffour, of Paris.

For the Minas Geraes plant, to L. Cantanhede and Arthur Haas.

MR. HAZLETT BACK FROM SOUTH AMERICA.

THOSE who attended the International Rubber Exposition, held in the Grand Central Palace last fall, will remember the fine South American views and interesting lectures given by Mr. Dillwynn M. Hazlett, who has made a study of the South American situation—particularly in reference to its rubber industry. He sailed again for that country in December to acquaint himself with the scope of the exposition to be held later in Rio de Janeiro, and has recently returned. He delivered some illustrated travel lectures on the returning steamer, which were so much appreciated by his fellow passengers that they presented him with a silver desk clock combined with a perpetual calendar.

Mr. Hazlett is most optimistic in regard to the opening in South American markets for goods made in the United States. He expects to return to that country in June, and will represent a number of important American manufacturers at the International Exposition to be held in Rio next September. Where manufacturers do not feel like going to the expense of shipping heavy exhibits they can tell their story very effectively to those who attend that exposition through Mr. Hazlett's system of moving pictures, accompanied by explanatory remarks. Everybody enjoys a moving-picture show, and it really affords an effective and inexpensive way of telling one's story to an audience in a foreign country.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

A Big American Rubber Factory for Rio de Janeiro.

THE BRAZILIAN GOVERNMENT ACCEPTS THE TENDER OF THE GOODYEAR TIRE AND RUBBER CO.

THE great awakening that has taken place in the rubber interests of Brazil during the last two years has been exceedingly significant in itself, but it has of late become more interesting because of the important part that an American manufacturing company promises to play in it.

The leading men of Brazil began two years ago to discuss seriously the steps that it would be necessary to take if Brazil was to keep its old commanding position in the rubber producing world. This discussion finally resulted in the act of the Brazilian Congress of January 5, 1912, which was further elaborated by the decree of April 17, 1912. This act and this decree have been described in considerable detail in the pages of THE INDIA RUBBER WORLD—especially in the issues of March and June of last year. It was the purpose of this legislation to encourage—by the offer of generous inducements—domestic and foreign capital to embark in the various forms of the rubber industry already established in Brazil, and also to enter upon new phases not hitherto attempted in that country, but which in the opinion of the legislators could be inaugurated with great benefit to the state.

Among the inducements for the entrance of new capital into the rubber field were certain large prizes offered for the first important washing and refining plants opened at sundry Brazilian points. Among those who have entered this competition and tendered bids to erect such refining plants is the Goodyear Tire & Rubber Co. of South America, a child of the Goodyear Tire & Rubber Co., of Akron, Ohio. The inducements offered by the Brazilian Government for the building of refining plants and the tender made by the Goodyear company, to erect two such plants—one at Pará and one at Manaos—are given in detail in another article which will be found on page 345 of this issue. But the Goodyear company was not content to enter the Brazilian field with a plant for washing and refining, but also made a tender under that paragraph of the decree of April 17, which offered a premium amounting to about $166,000 to the company that should first erect a plant in Brazil, in one of several points mentioned, for the manufacture of rubber goods, under the detailed specifications cited in that decree.

The bid of the Goodyear Tire and Rubber Co., which will be found quite fully described a little farther on, covered the erection of a factory at Rio de Janeiro, and a cable recently received from the American Consul at Pará states that this offer has been accepted by the committee appointed by the government to pass upon the bids submitted; and unless some untoward event arises to change the present plans, it is highly probable that within a year's time, a large rubber manufacturing plant—the first one on the South American Continent—will be in operation in the chief city of Brazil, owned and operated by an American manufacturer.

This entrance into the foreign field by the Goodyear Tire and Rubber Co. was not the result of any sudden impulse; its directors evidently have had such an ambition for some time. Two years ago or more they had practically completed arrangements with President Diaz of Mexico for the erection of a rubber goods factory in that Republic, under conditions that would have been exceedingly favorable to the company. But the revolutionary disturbances that came soon after, accompanied by the flight of Diaz and the ascendency of the unfortunate Madero, brought all these plans to naught. The company then sent Mr. J. C. MacFadgean to South America to look over the situation there. He made a careful investigation, first of Buenos Aires and then of Rio de Janeiro, the latter place appearing to him to offer the best advantages as a site for such a factory. He returned to Akron and made his report and then went back to Rio with Mr. Litchfield, the factory superintendent, and together they went still more thoroughly over the ground. They were satisfied that it was an exceedingly promising field, and they located a site where there was abundance of water. Then in order properly to prosecute the enterprise the Goodyear Tire and Rubber Co. of South America was incorporated under the laws of the State of Maine, in Augusta, Maine, on October 14, 1912. The certificate of incorporation states that "The purposes of said incorporation are to engage in, carry on and license others to carry on the business of manufacturing articles from rubber and other materials; to lease, purchase, or otherwise acquire, and to hold lands for the cultivation, collection and refining of crude rubber; and to do all things incidental thereto." Further amplification of the purposes of the company, as given in the certificate, permits it to engage in practically any sort of undertaking (except banking and insurance) anywhere in the world where not contrary to the laws of the community in which the enterprise is to be undertaken. Specifically it is the intention of the company to manufacture tires, mechanical rubber goods, insulated wire and druggists' sundries. With this charter and armed with credentials not only from the State of Ohio, but from the authorities of Washington, Mr. MacFadgean returned to Rio de Janeiro and got into communication with the government. Hearing what was under way a number of Rio de Janeiro people went to England and interested capitalists there in the same enterprise. However, either they were not sufficiently familiar with the conditions or did not put their proposals in proper shape, for they were not successful. The bids were submitted to the Defesa da Borracha, a commission of which Raymundo P. da Silva is the head, and after several adjournments the bids were opened and read at a public hearing and published in the "Diario Official." Then a committee of five, consisting of four prominent professional men in Rio, and J. Simeo de Costa, whose knowledge of rubber is recognized, was appointed to pass upon them, and the bid made by the Goodyear company was the one accepted.

The Goodyear people plan to have their factory in operation inside of a year. They intend to take the foremen of the departments from Akron, and they purpose also to send a number of young Brazilians to the great Ohio rubber centre to learn the rubber business. One interesting feature of the enterprise will be the erection of several hundred cottages for the employees. In addition to giving them suitable shelter, the company proposes to furnish them with a substantial and wholesome mid-day meal. The specifications of the tender made by the Goodyear company and accepted by the Brazilian Government are as follows.

THE PROPOSED GOODYEAR MANUFACTURING PLANT AT RIO.

The Rio "Diario Official" of February 13, following up the proposals of the Goodyear Tire & Rubber Co., published February 9 (reproduced on page 346 of this number) for washing and refining plants at Manáos and Pará, published the text of that company's estimate for a manufacturing plant at Rio. While in various points it is based on the same fundamental principles as the washing plants, it is of a much more extensive character, as may be seen by a comparison of the various estimates, that for the manufacturing plant being subjoined.

Briefly summarizing its main features, it will cover a space exceeding 150,000 square feet and will have 10 buildings, each with three floors, in which will be conducted the operations connected with practically all branches of the rubber manufacturing

industry. As the company owns lands of the area of about 800,000 square feet, it will have ample room for further extension.

It is contemplated to distribute the prospective large product of the company, not only in Brazil but throughout South America and the East. The last named form of distribution is evidently based on using the Panama Canal. In view of expected requirements the Goodyear Tire & Rubber Co. of South America, proposes to employ a capital of $3,000,000 in the enterprise, which capital would be increased as necessary. The supply of water for drinking purposes, as well as for industrial uses, is said to be abundant.

Importance is attached to the contemplated attraction to Rio de Janeiro of an influential group of experts in all branches of rubber manufacture. Among the articles it is proposed to manufacture besides those named in the estimate are: Combinations of rubber and asbestos; waterproof fabrics, and industrial preparations of rubber.

In the application, stress is laid upon the necessity of maintaining the principles of fiscal protection, without which no premiums and no amount of government support would be efficacious. Such are in brief the main features of the proposal of the Goodyear company for the erection of a rubber goods factory at Rio, with which it is hoped to gain the premium equal to about $166,000 as provided by the law.

ESTIMATE OF THE COST OF A RUBBER MANUFACTURING PLANT AT RIO, AS SHOWN IN THE PROPOSAL OF THE GOODYEAR TIRE AND RUBBER CO. OF SOUTH AMERICA.

	Brazilian.	American.
Acquisition of ground	400:000$000	$133,300
Construction of ten buildings covering an area of 14,253 square meters (152,507 sq. ft.) in three floors	2,069:020$000	689,673
Workingmen's village	550:000$000	183,300
Electric plant for 750 h. p.	180:000$000	60,000
Machinery and installation for washing and refining	60:000$000	20,000
Section of maceration and calenders: Machinery and installation	180:000$000	60,000
Section of pneumatic tires, etc.: Machinery and installation	90:000$000	30,000
Vulcanizing section: Machinery and installation	155:000$000	51,666
Section of electric wires and cables: Machinery and installation	360:000$000	120,000
Section of hose and rubber tubing: Machinery and installation	90:000$000	30,000
Section of shoes and accessories: Machinery and installation	80:000$000	26,666
Section for belting, etc.: Machinery and installation	70:000$000	23,333
Section for toys and stationery articles: Machinery and installation	40:000$000	13,333
Sections for air goods, etc	20:000$000	6,666
Section for surgical and pharmaceutical goods: Machinery and installation	25:000$000	8,333
Small sections: Machinery and installation	35:000$000	11,666
Repair shops	60:000$000	20,000
Electric lighting, water and fire service	250:000$000	83,333
Tramways, railways and switches	80:000$000	26,666
	4,794:020$000	$1,597,935
Contingencies 10 per cent.	479:402$000	159,869
Totals	5,273:422$000	$1,757,804

One interesting phase of the particular paragraph of the Brazilian act which has to do with the encouragement of the building of a rubber factory is the list of manufacturing ingredients that are to be admitted free. This list was made up from "Crude Rubber and Compounding Ingredients" written by the editor of THE INDIA RUBBER WORLD; but unfortunately the list was compiled by some one evidently not familiar with rubber compounding, and consequently contains some irrelevant items and omits some of material importance. For instance, whiting and litharge are omitted—the two most important compounding ingredients, while certain other articles are mentioned which are not to be found in any market. Kamptulicon appears on the list, which in reality is nothing more or less than linoleum. Okonite is also on the list, which would appear to enable the Okonite Co. to send in their insulated wire free.

The advantage of a rubber goods factory in Brazil, over all competitors outside, in securing the South American trade, is very obvious, as, in the first place, crude rubber exported from Brazil pays a duty of 20 per cent., and in the second place, manufactured rubber goods imported into Brazil, and the neighboring countries, pay exceptionally heavy duties, and it is reported that a law will be passed by the Brazilian Legislature to advance the import duties where necessary so as to give the Goodyear company a practical monopoly. And it is said to be the intention of the Goodyear company to seek not only Brazilian trade, but the entire trade of South America, including Argentine, Paraguay, Uruguay, Chile, Peru and the other republics.

The present consumption of rubber goods in South America is not so very large, although it affords a very substantial market on which to begin operations; but the possible South American market which can be secured by an enterprising manufacturer making just the goods that the market demands, is an extensive one. The total imports of manufactured rubber goods into South America for the year 1912 from the United States amounted to $600,000, divided about as follows: Packing and belting, $188,000; footwear, $81,000; auto tires, $46,000; other tires, $50,000; all other rubber goods, $235,000.

The last complete statistics of the imports of manufactured rubber goods into South American republics from all sources cover the year 1909, when the imports from America amounted to only one-tenth of the entire rubber goods imports. Presumably about the same relation exists today, which would indicate that the entire consumption in South America of imported rubber goods is something like $16,000,000 a year. It would appear on the surface as if the new factory at Rio de Janeiro ought to get a very large part of this trade, and under the advantages of crude rubber and other ingredients free from duty as against competitors, all of whom have to pay Brazil's export duty on the crude rubber, and high import duties on the manufactured article, it ought to be able to market its products at a price that would greatly and rapidly increase the demand for its goods.

The proposal of the Goodyear company includes an agreement to commence manufacturing within the term of 12 months from the signing of contract, as well as a clause for reversion to the government in 90 years.

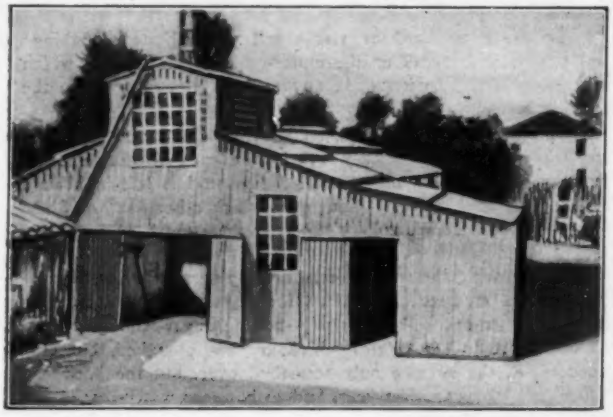
Late advices, received just as this publication is going to press, state that the Brazilian Government, in addition to granting the Goodyear Tire and Rubber Co. of South America an award for a rubber factory at Rio, has given an award for a rubber factory at Pernambuco to the Companhia Norte Brazil; which would seem to indicate that while the Rio factory will enjoy advantages as against outside competitors that will be practically prohibitive, it is not to have an absolute monopoly of rubber manufacture in South America. Possibly there is to be a division of the field, each factory confining itself to certain lines of manufacture. Advices received up to the present time give no information regarding this point.

INVESTIGATION INTO TAPPING METHODS.

The Agricultural Department of the Federated Malay States is carrying out some interesting experiments in regard to tapping methods, with a view to ascertaining the effect upon yield of the number of cuts per tree. Figures will be shortly available.

Rubber Washing in Bahia.

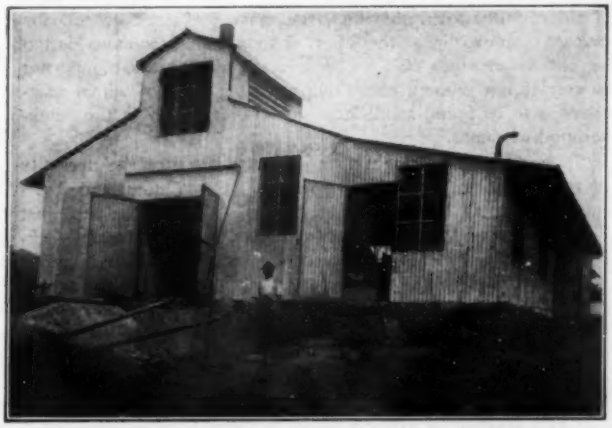
In September, of the year 1910, the Jequié Rubber Syndicate, Limited, erected a custom washing plant at 59 Avenida Luis Tarquinho, Bahia. This was the first plant designed for general rubber washing to be established in Brazil. The buildings were erected and the machinery set by Mr. George A. MacNab, a



First Rubber Washing Plant in Brazil—Jequie Rubber Syndicate, Limited, Bahia.

competent rubber machinery expert, for some time in the employ of David Bridge & Co., of Manchester, England. The washing machinery consisted of 2 Dessau washers producing irregularly shaped chunks weighing from ¼ to ½ pound each—the product being called "Rock" rubber—and 3 roller washing and creping machines, built by David Bridge & Co. The capacity of the plant was 1½ tons per day. The charge per cleaning the rubber was from 300 to 400 reis per kilo (from 4½ to 6 cents per pound), according to the dirtiness of the rubber.

According to the law passed in April, 1912, a premium of 100:000$. (about $30,000) was to be paid for the first factory



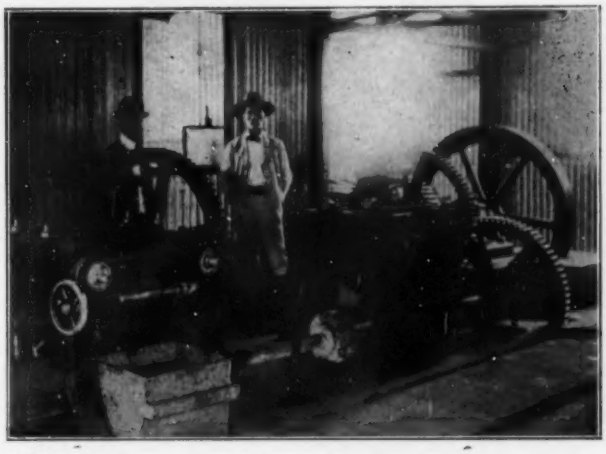
Washing Plant of the Lafayette Rubber Estates, Limited, Machado Portella, Bahia.

established in Bahia for the washing of Manicoba and Mangabeira rubber. The Jequié Rubber Syndicate, Ltd., applied for this premium, but it was claimed that they had not complied with certain provisions of the act, and they were never able to collect it.

There is still another washing factory in Bahia, a small one owned by S. Hess & Co., which is now in operation. Still a third one is now being erected by the Villa Nova Estates and Trading Co., of London and Bahia, and associated with the Companhia Nacional de Artefactos da Borracha. Local directors are Sr. José Gama da Costa Santos and Theodore Oedekoven, Esq. The plant consists of a 70 h. p. engine and a Cochran Vertical Tubular boiler; one Werner & Pfleiderer Universal Roller Washer for producing "Rock" rubber; four David Bridge & Co.'s Roller Washers for sheet and crepe rubber; pumps, tanks and water heating apparatus; and also a separate cement-lined well set in the floor to collect the impurities, in order to obtain accurate data as to the quantity and character from each washing.

The plant is to have the capacity of 2,000 kilos (4,400 pounds) per day, and like the Jequié Rubber Syndicate's plant, is being erected by Mr. Geo. A. MacNab.

There are also several washing plants connected with the larger plantations; for instance, that of the Lafayette Rubber Estates, Limited, located at Machado Portella. Illustrations of the exterior and interior of this plant are here shown.



Interior View of the Washing Plant—Lafayette Rubber Estates, Limited, Machado Portella, Bahia.

It is interesting to note that the washing of the rubber in such tropical places as Bahia has developed difficulties that do not appear in the temperate zone, and many batches have been injured rather than helped by the washing. Some of the "Rock," for example, softens and breaks down before it reaches Europe or America. The Manihot is the easiest to wash, and the Mangabeira the most difficult. The latter, if badly coagulated, seems to decompose more easily after washing than before. Some of the Maniçoba also is so dirty that it costs 600 reis per kilo, or about 9 cents per pound, to wash. Air drying is accomplished in all the plants in Bahia by hanging the rubber on poles, in dark, well-ventilated lofts. Ten to twelve days are required to complete the drying process; when the rubber is ready to be boxed and shipped.

RUBBER IN THE HAWAIIAN ISLANDS.

The report of the manager, W. A. Anderson, at the annual meeting of the Nahiku Rubber Co. and the Hawaiian-American Rubber Co., gives assurance that the rubber industry will become established on a profitable footing in Hawaii. A total yield of 10,000 pounds is expected this year.

Farming By Dynamite.

By Harold Hamel Smith, Editor of "Tropical Life."

[A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.]

WHILE I have long suspected the possibilities of explosives in connection with agriculture, especially in the tropics, it has been only during the last twelve months that I have been able to satisfactorily demonstrate how very useful dynamite, and the other "ites" can prove, when used with discretion and by trained natives or Europeans. By their use both time and money can be saved, and better work done, both as regards the soil and the crops.

As regards the handling of these high explosives by natives, I would consider that any race or tribe which is intelligent enough to be trained to tap rubber trees, or extract pulqué from the maguey plant, as is done under the direction of white supervisors,

Harold Hamel Smith.

could be trained to handle these explosives, drill the holes, and pack in the cartridges under the same class of white directors, as with the rubber tapping.

I did intend to devote my paper to "Rubber Seed Oil," a subject to which I have given a considerable amount of attention of late, but have chosen the question of "Farming by Dynamite" instead, as it is more widespread and international in character, and is of special interest to an Anglo-American Tropical Congress. On account of the now widespread use of explosives on cultivations, I would first state that if I do not include the names of the leading centers which have lately been using or experimenting with them for breaking up soils (some of the farmers in the western states of America have, I understand, regularly blasted their ground for twenty or thirty years past, and obtained bumper crops thereby), nor mention the names of all the leading journals that have been good enough to open their columns to discuss the matter, it is not for want of appreciation on my part, of the important share that they have taken in helping us to become "at home" with the use and handling of explosives, but for lack of space and time at my disposal and yours. I must, on the contrary, be far more brief than pleases me, for this is a subject which, the more it is discussed, the more one can realize what can be done with dynamite, and hence the more one would like to say on its use.

Dynamite or other explosives—and for the sake of brevity let me say "right here," that every time I use the word dynamite, I mean to infer "or other explosive if more suitable"—can be used with advantage in agricultural industries for the following reasons:

1. To break up hard or virgin soil to facilitate ploughing; and especially to break up the under-crust, when present, which no plough could penetrate, at any rate no plough used by the average farmer or planter.

2. To blast out for removal, boulders, or rocks, and especially tree stumps, whereby not only is the risk of root disease removed, but, what is of great importance, the ground is left in a state to be easily and properly ploughed; which otherwise would be impossible in a satisfactory manner, if the stumps or rocks are left *in situ*.

3. For clearing the soil of pests, destroying ants' nests, or rabbit warrens, etc., etc., as well as for regenerating and aerating hard or worn-out soils generally—as the sugar-lands on some of the West Indian estates which are not ploughed, but only hoed; i. e., the surface only scratched over, but the hard pan sub-soil is left year after year, and so becomes water-logged and airless; hence dangerous.

4. For throwing up the soil for drains, especially deep gullies, and facilitating its removal by ploughs or hand.

5. For making holes for tree planting, and at the same time loosening the soil, which is a great advantage; also for fence-post holes, or for setting uprights for buildings, etc., in position.

6. For well-boring, or well-torpedoing—i. e., for increasing the flow from an artesian well by exploding a charge at the bottom of a well, to widen the aperture, and break up the ground, to let further supplies of water (or oil, if an oil-well) come through.

As time goes on, many other uses on the estates will no doubt be found, but as I do not pretend to have an exhaustive knowledge on the subject, I think I have said enough. Of course, I do not pretend to touch on the use of explosives for mining, since I speak only from the agriculturist's point of view; nor even of their utility for removing large masses of rock or soil for making estate roads, as the latter, although not uncommon, is too big and dangerous a task for the average planter, and should not be carried out without consulting an expert, one of whom nowadays is to be found at all large centers, especially in the neighborhood of mines.

"It must not be thought that dynamite obviates the necessity of top ploughing," very truly points out the "Queensland Agricultural Journal." "Far from it. The plough must be used just as much as ever. The only difference is, that the dynamite expends its disintegrating force in the sub-soil, which is never touched by the plough, so that one is not merely planting the crops in the same soil year after year," but can, by its use, enable the crops to draw up their nutriment from below. Where clay sub-soils form a water seal, the use of explosives, if correctly applied, breaks up the clay strata and so allows the accumulated and stagnant water to pass through (at the same time the explosion kills myriads of harmful lives), and dissolving the plant foods in the lower, and hitherto inaccessible strata, liberates it in such form that it can be drawn up by capillary attraction, and pass through with the now non-stagnant water to be assimilated by the crops. May I remind you here—as I reminded the readers of my book on "Coco-nuts"—of the need of regular, adequate supplies of water at all times, if you want good crops. Water is necessary, and therefore should constantly be at the disposal of the crops (provided, of course, if not in over supply), to convey

the plant's food in soluble form up to the crown. The quantity of such food assimilated or digested by the plant is roughly proportional to the amount of water which it absorbs—provided, of course, that the food is there to be absorbed; but the food alone is no use; without the water it cannot pass up the trees or plants and nourish them.

"Farming by dynamite," wrote the (London) "World's Work" last April, has gripped the United States and is spreading through Canada and Mexico like a prairie fire. "The farmers who have tried it, swear by it, and are upheld by the leading authorities in agricultural science." I can confirm this from the tropics. Since I first drew attention to the use of high explosives in tropical and sub-tropical agriculture, by reviewing a book (The Book of High Explosives, published by the Nobel Explosives Co., Ltd., of Glasgow), I have received innumerable applications for copies of the book and further information on the subject, right up to the time of writing these notes, which I stopped doing to order a copy to be sent to a cacao planter in Una, State of Bahia, Brazil. The "Queensland Agricultural Journal," already quoted, evidently found the same thing, for the editor writes. "Since the publication of our articles on the value of dynamite as an aid in clearing land, and to subsequent agricultural operations, judging by the numerous letters we have received from farmers and fruit growers seeking further information on the subject, much interest—we might almost say enthusiasm—has been aroused in many parts of the state in connection with the use of dynamite on the land;" while the "Times of Ceylon" quotes the following instance of its use for rubber planting by a Kelani Valley (Ceylon) rubber planter, using only ordinary dynamite cartridges: "First of all he used a quarter of a cartridge, then a half, and then a full one, and kept data of the area of ground disturbed when the quantities of dynamite had been fired. The plough only breaks up the top surface, so that the water mingles and dissolves the plant nutriment to a depth only of a few inches. The sub-soil, however, remains intact, and the roots of the crops have to feed upon what they can obtain from the land broken up by the plough. But breaking the land up by dynamite disturbs it to a depth of several feet, letting in the water which dissolves the essential nutriment, while the roots are able to descend to a greater depth and thus secure their fill of food. Again, the roots are allowed to grow downwards and not laterally; thus they do not encroach on the feeding areas of the adjacent trees, which is the case when there is only a top shallow layer of porous soil.

"The planter in question, we understand, has applied the new method to five acres of land and planted rubber trees therein. It is, of course, too early yet to judge the results in the growth of the plants. If the results are as good as anticipated it is very likely that the method will be widely adopted in Ceylon. The Red Cross dynamite was mentioned in the article which we quoted, but these not being procurable, ordinary dynamite cartridges were used in this case.

"Now that a local planter has started the method here," continued the paper, in its comments on the experiment, "it will not be out of place to quote one section of a recent article on the subject, which is of especial interest to planters: 'Possibly what at first sight appears to be the strangest application of dynamite is for the purpose of planting trees, yet its success in this connection is peculiarly remarkable. When a hole is made with a spade the surrounding soil is left in its hard condition. The result is that the roots find it difficult to start. They are cramped in the tight quarters of the hole and cannot pierce the surrounding hard wall of earth. Under these circumstances growth is appreciably retarded for a considerable time. With dynamite a large clean hole is blasted out and, in addition, the soil on all sides is loosened for five or six feet. When the tree is planted the young and tender roots force their way without effort through the crevices, sucking up nourishment, and commence to grow from the moment they are set, without any retardation whatever.' Those qualified to speak upon the subject are of opinion that this will bring trees forward at least a year sooner than those planted under the old conditions."

"A new profession has arisen of expert dynamite farmers," says "The Wealth of India," when commenting on the article in "The World's Work"; "dynamite is used for planting trees. The spade-made hole leaves the surrounding soil in a hard condition, and the roots find it hard to start. With dynamite a large, clean hole is blasted out, and the soil on all sides is loosened for five or six feet, thus enabling the trees so planted to grow twice as quickly as those set in the usual spade holes."

"We heartily commend the subject of 'Farming by Dynamite' to our readers"—writes the editor of "Grenier's Rubber News," at Kuala Lumpur, right at the heart of the plantation rubber industry in the Far East. "The consensus of opinion, at least among planters of the Federated Malay States, is that clean-clearing, which means the removal of all stumps and timber, is of paramount importance, and we feel sure that a perusal of the methods discussed" (in an article they published) "will convince planters that at last there is material available to accomplish the work expeditiously and economically."

"In South Africa," reports the "Home and Colonial Mail"—well known throughout India and the East—"experiments in ploughing by dynamite are becoming quite popular. It is claimed that operations can be carried out without injuring crops, and demonstrations are now taking place all over the Union with the object of fostering agriculture. The cost per acre is said to work out at between £2 10s. and £5 according to the nature of the soil and trees. Dynamite can be used for ditching, for constructing irrigation furrows, and other farming purposes."

All the leading papers in the rubber producing world, as well as those devoted to planting interests elsewhere, recommend attention to the use of dynamite for estate work. Its use especially appeals to me for out-of-the-way sections, and especially in Latin America, where the transport, even of the lightest make of ploughs, is difficult and costly, often impossible. In centers where the *tsetse* or other pest discourages the use of draught animals, the use of explosives should rapidly increase. Possibly the shocks, if not the actual explosions, might diminish the pests, especially if steps were taken to attract them to the spot by bait, in the shape of food to which they are partial. In locust infested soils, the numbers of these pests, at all stages, even when in flight, could be greatly reduced by organized explosions to greet them with a *feu de joie* whether in the soil as grubs or flying over it. But there is no need to extend the list. You whom I am addressing are far more able than myself to think them out. I would, however, say in conclusion, that planters of cocoanuts, fibres, Ceará rubber, and other crops which can be grown to advantage, when scientifically cultivated, in almost semi-arid districts, will find the use of explosives a great aid as the following letter, written from Kalkudah, in the Eastern Province of Ceylon, to the editor of the "Times of Ceylon" (see their issue of June 20, 1912) tends to prove:

"I read with great interest the articles *re* 'Farming with Dynamite' in the 'Times of Ceylon.' I believe this method will gain popularity in the Eastern Province, as there is a slab of coral from the coast here to one-and-a-half miles inland, or further, and this runs from 2 to 9 ft. below the surface, in some places measuring 18 to 24 in. in thickness. It is not porous, but in some parts is soft and limy. There is water immediately below this slab, but the coco-nut roots cannot get to the water, and the trees are therefore greatly affected by the drought, and large sums of money have to be expended in watering plants. One notices patches of coco-nuts, old enough to give large crops, looking sickly, with not even a blossom on them. This is mainly due to the existence of this slab, which had not been broken through before planting out. Dynamite blasting will do more for these than tons of manure. A hole drilled in between every four plants through this slab and blasted with dynamite

will crack up this slab, and enable the roots to find their way to the water, which is just underneath it.

"Again one finds that, after rain, the water remains in some places for weeks on the surface, affecting all the trees or plants in that area. This, too, would not occur if the slab were broken up, as the water would find its way through the cracks. In some places here, where this slab was broken through before planting out, the plants require very little watering, and the bearing trees are healthy and full of crop even during the severest drought. The method used in these places is to cut down to the slab and break it with pick-axes at a prohibitive cost. If holes could be drilled and dynamite used, the breaking up of the slab will be much greater and the cost less than half. Perhaps the cost of holing with dynamite and planting will be slightly higher, but there will be a great saving in watering, and the chances given to plants to strike root and bring them earlier into bearing will amply repay this. Even in bearing fields where this slab occurs it would be well to have it broken up a little and allow the roots to find their own water.

"It would be interesting to hear of results of a few experiments and also have the views of some of the veteran planters of the Eastern Province on the subject."

In conclusion, I hope to see further reports on the matter, not only over coco-nuts, but in connection with rubber-planting and tropical agriculture generally. Meanwhile there is no doubt that explosives have not only come to stay as a necessary auxiliary to modern agricultural science, but their use will extend on all sides until they occupy a prominent position therein.

A Brief History of Fire Hose Specifications in the United States.

By E. A. Barrier, Factory Mutuals Laboratory.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

THIS paper is not presented as a brief in defence of the present Underwriter Hose Specifications, but is intended to relate the more important events which have led to their development.

The statement, still occasionally heard, that fire hose is installed principally for fire insurance inspectors to look at, was evidently the standard used by a large number of manufacturers previous to 1890. The quality of hose, especially that for private equipments in those days was truly remarkable. It was a matter of common occurrence for length after length to burst at pressures well under 100 pounds and if the rubber lining stayed soft and pliable for two years, the purchaser could consider himself lucky. Frequently the backing would fail, allowing the lining to separate from the fabric and occasionally the lining would be ripped out by the water and be washed along with the stream, plugging the nozzle. It is true that in many cases the price of the hose was so low that a good grade could not have been expected, but this does not alter the fact that the situation was a serious one and badly in need of improvement.

Steps in this direction were first undertaken by Mr. John R. Freeman, then connected with the Inspection Department of the Factory Mutual Fire Insurance Companies, and now one of the foremost hydraulic engineers in the country, although still connected with the Mutual Companies in the capacity of president of several of the individual companies. Mr. Freeman had previously, in 1888, conducted a series of experiments on the hydraulics of fire streams, in which he found that the character of the waterway in the hose had a marked effect upon the friction loss or drop in pressure. Thus, with a badly corrugated mill hose, the drop in pressure per 100 feet with 240 gallons flowing per minute in 2½-inch hose, was found to be 25½ pounds, while with the smooth hose, the drop in pressure was only 14 pounds. In other words, if 200 feet of hose were being used in a line, it would require a pressure of about 73 pounds at the hydrant to give a good fire stream with good hose, while with poor hose it would require a pressure of 95 pounds.

In view of the importance of this matter, the question was taken up with a number of the largest hose manufacturers. In the numerous conferences which followed, the discussion spread from friction loss to include cotton fabric, rubber lining, bursting strength, elongation, etc. Practically all agreed that the fire hose situation, especially with respect to private equipment hose, needed improvement, and most of the manufacturers were in favor of specifications. Finally, after a large number of tests had been made and many lots of hose examined in the field, the first set of Underwriter Hose Specifications were agreed upon and published in July, 1896.

It should be mentioned that in these first specifications, it was originally suggested that all reference to the kind of rubber in the lining be omitted, but many of the manufacturers objected, stating that if the kind of rubber was not specified, some unscrupulous manufacturers would take advantage of those who were honest by using an inferior rubber. Accordingly a clause specifying the kind of rubber was inserted, and it was the concensus of opinion that 40 per cent. of pure Pará should be required. This unfortunate wording, which later gave rise to the question as to what was meant by pure Pará, has been the cause of more discussion than any other clause in these specifications. There is ample written evidence, however, to show that at the time the original specifications were written, and for several years after, everyone interested in hose specifications understood that pure Pará meant fine Pará.

The whole idea in this matter of specifications was to obtain a list of manufacturers whose product could be depended upon, and which could be recommended to mills insured in the Factory Mutual Companies. This idea had been and was being developed in many other lines of fire protection appliances at the same time. The plan of procedure used then, and which has not been changed in any important particular, was as follows: Any manufacturer desiring to have his hose placed upon the approved list, had only to make known his desire and send in samples of commercial hose for test. If the samples were found to conform with the specifications, his name was placed upon the approved list without charge for the tests.

In these early days, the words "Factory Inspection" were not used, but it was understood that representatives of the Mutual Companies would be welcome to visit the factories of the hose manufacturers at all times. Although no systematic plan of inspection was carried out, many such visits were made to the factories, and without objection on the part of the manufacturers.

From the time the first specifications were published in 1896, no change was made until 1900, and at that time the changes were of no great importance. In the meantime, the National Fire Protection Association had been formed and the Underwriters' Laboratories established. At this point it may be stated that although the National Fire Protection Association is a national association of those interested in the prevention of fire, in reality, through a large preponderance of members affiliated with stock insurance companies, it is controlled largely by the stock companies.

In 1889 the National Fire Protection Association adopted a set of specifications for hose which were very similar to the Factory Mutual Specifications of 1896, but enough different to cause some confusion among the manufacturers. It became evident at once that where these two organizations covered the

greater part of the field, it was desirable that their specifications should be uniform. With this idea in view, a number of conferences were arranged, and finally a "National Standard" satisfactory to both parties was adopted in May, 1902. Only two important changes from the original specifications were made. One item regarding stretch of the rubber lining to five times its original length, which had appeared in the N. F. P. A. Specifications, was omitted, and another item requiring a test of 200 pounds on each 50-foot length, not originally in the Mutual Specifications, was added. From that time to the present the specifications for underwriter hose for both organizations have been essentially the same, although their ideas regarding the method of enforcement have differed widely.

The intervening years up to 1911 were occupied with the continual testing of samples from the field and from the factories and the gradual accumulation, especially in the later years, of evidence that most of the manufacturers of hose were not turning out a product made in accordance with the specifications. During this time the methods of rubber analysis and testing developed considerably, and the Insurance Laboratories made an effort to keep pace with the progress. In this way the number and character of the analyses and tests made in connection with the examination of hose gradually changed. It should be noted, however, that the chemical and physical tests which were used, were employed merely as laboratory standards with the idea of determining whether or not the specifications had been complied with. Owing to the fact that many points in connection with rubber testing had not been established with the same degree of certainty as in other lines of chemical work, some of the manufacturers did not neglect the opportunity to deny the findings of the laboratories, although in many instances the cases were so clear cut as to leave no question.

A typical example of this kind taken from many others, is one where a certain lot of hose which failed after four years' service was sent by the assured to the Factory Mutual Laboratories for test. An acetone extract of over 20 per cent. was found after deducting the free sulphur, and a small percentage of wax, and this, in connection with other chemical tests, showed beyond question that the requirements regarding rubber in the specifications had been seriously violated. Notwithstanding this evidence, the manufacturer steadfastly maintained that the lining contained only a mixture of fine and coarse Parás. He even went so far as to claim that he could show samples of Pará which would give an extract of 20 per cent. He also obtained a sample of the lining which he submitted to an independent chemist for analysis. Needless to say his proposal to submit a sample of Pará containing 20 per cent. resin extract never materialized, but a representative of the manufacturer called up on the telephone some time later, and stated that he had a report from his chemist showing that the lining in question had consisted only of Pará, as he had claimed. He was requested to bring in the report, but although that was four years ago, it has not put in an appearance as yet, and the manufacturer finally agreed to replace the hose with another lot fully in accordance with the specifications and without charge to the assured. The hose was replaced in time and to make a long story short, suffice it to say that the second lot was no better than the first. The manufacturer was surprised to learn that we had tested the second lot, but after an extended controversy agreed to replace the hose again.

This case, although in some of its features a little more extreme than most of the others, is simply a sample of similar incidents that took place, and which made it very difficult for us to appreciate the position of some of the manufacturers whose integrity had previously never been questioned. These controversies also made it evident that before the hose situation could be definitely cleared up, it would be necessary to include as part of the specifications the laboratory standards which had been used in testing hose.

In the meantime, in 1906, the Underwriters' Laboratories of Chicago developed their system of "Label Service." In brief, this system required that an inspector should be stationed at the factory and inspect every length of hose sent out; also that each length should bear a label stating that the hose had been manufactured under the supervision of the Underwriters' Laboratories of Chicago. Samples of hose could be taken at any time and shipped to the Underwriters' Laboratories for more detailed tests than could be conducted at the factory. The labels were to be purchased by the manufacturers from the Underwriters' Laboratories at the price of 25 cents each. Owing to several objectionable features which it was found impossible to have removed in spite of a number of conferences, the label service has never been adopted by the Mutual Companies.

The proposition, although at first opposed by some of the manufacturers, was adopted by a few of them. Owing to various differences of opinion and controversies, however, these few manufacturers later dropped the labels and during 1909 and 1910, all of the manufacturers on the Approved List of the Chicago Laboratories were dropped. The opposition to the label service on the part of the manufacturers was very bitter and for over a year their ranks were kept unbroken. In the early part of 1911, however, two of them submitted samples of hose to the Underwriters' Laboratories, which were approved, and adopted the label service. Later in the year another manufacturer followed. At the present time these three are the only ones using the labels.

The system has been developed, it is understood, until now the inspector at the factory supervises the washing of the crude rubber, the weighing and compounding of same and the calendering and making up of the tubes. In short, the rubber from the beginning of the manufacturing operations until the hose is completed is either in the inspector's presence or under lock and key kept in his possession. The tests which the specification require are made on every length, and are conducted in the presence of the inspector.

In 1908, the National Board of Fire Underwriters undertook the preparation of specifications for public fire department hose, both cotton, rubber-lined and rubber-covered. Regarding the history of the development of these specifications the writer has no detailed knowledge since the Mutual Companies have, as an organization, never taken a sufficiently active interest in this matter to warrant drawing up specifications for this class of hose.

In brief, however, it may be stated that after a long series of conferences between the National Fire Protection Association and the manufacturers, a set of specifications were drawn up which, at the time, were satisfactory to both parties, and which allowed a much lower grade of rubber than the present specifications. The manufacturers insisted, however, that these specifications should be used merely as a laboratory standard, and not furnished freely to purchasers. In other words, hose would be approved by the Underwriters' Laboratories without its becoming generally known that it was all made in accordance with a definite set of specifications. Whatever may have been the understanding, or misunderstanding, the specifications were used freely throughout the country by the Underwriters' Laboratories. The manufacturers accordingly cancelled their agreement and dropped all negotiations. The N. F. P. A. later worked out a much more stringent set of specifications which were proposed at the annual meeting in May, 1911, and formally adopted in May, 1912. The requirements regarding rubber lining in these fire department hose specifications are very similar to those contained in the underwriter hose specifications. The three manufacturers who have adopted the label for underwriter hose are also manufacturing label hose under the fire

department hose specifications, which we already referred to.

As previously stated, the accumulated experience of the Factory Mutual Laboratories during the last five years showed that much more specific and definite requirements regarding rubber lining would have to be included in the specifications before the situation could be improved. A considerable amount of experience backed up with experimental work showed pretty clearly what was necessary to produce good hose, and a new set of specifications were accordingly drawn up in the latter part of 1910. At the same time the Underwriters' Laboratories prepared more definite specifications and presented them at the annual meeting of the National Fire Protection Association in May, 1911. The two specifications differed somewhat, however, and the matter was referred back to the Hose Committee in order that the two organizations might have an opportunity of agreeing upon a uniform standard. A number of conferences followed and a specification was finally drawn up satisfactory to both organizations. It was formally adopted by the Factory Mutual Companies in December, 1911, and by the National Fire Protection Association in May, 1912. Owing to the various delays, the Mutual Companies have not yet put these new specifications into effect, but in the near future the manufacturers of underwriter hose will be notified that after a certain date, approval will be withdrawn in cases where the hose is not made in accordance with the new specifications. The specifications have already been sent to the manufacturers and in a few cases they have voluntarily expressed their satisfaction with them and stated that they were heartily in favor of the change.

The most important points where the new specifications differ from the old are with respect to the rubber lining. The change consists simply of a more definite statement of what was required in the old specifications. The new specifications call for 40 per cent. of fine Pará instead of pure Pará, and specify tests which the compound must meet, including acetone extract, free and total sulphurs, alcoholic potash extract, tensile strength, elongation and the so-called permanent set.

In closing, it may be stated that the only object of the Mutual Companies in this matter of hose specifications is to make it possible for their members to obtain good hose. The work of testing and inspection is done without charge to the manufacturers, and it has always been the intention to treat them fairly and co-operate with them as far as they would allow.

Referring to the situation in 1908 between the manufacturers and the National Fire Protection Association the author says:

"It may be stated that after a long series of conferences between the National Fire Protection Association and the manufacturers, a set of specifications were drawn up which, at the time, were satisfactory to both parties, and which allowed a much lower grade of rubber than the present specifications. The manufacturers insisted, however, that these specifications should be used merely as a laboratory standard, and not furnished freely to purchasers. In other words, hose would be approved by the Underwriters Laboratories without its becoming generally known that it was all made in accordance with a definite set of specifications. Whatever may have been the understanding, or misunderstanding, the specifications were used freely throughout the country by the Underwriters' Laboratories. The manufacturers accordingly cancelled their agreement and dropped all negotiations."

OVER 100,000 AUTO-CARS IN NEW YORK.

The automobile is exceedingly popular in the State of New York. This State owns over one-tenth of all the motor cars of the United States. In 1912 the number of automobile owners registered with the Secretary of State was 107,262, an increase of 21,961 over the number recorded in 1911. In the same period 45,347 chauffeurs were licensed, an increase of 9,457 over the previous year. The registrations were divided as follows: Pleasure vehicles, 95,484; commercial cars, 9,767; dealers, 1,716; exempt vehicles, 295.

REPORT OF THE RUBBER SECTION OF THE AMERICAN CHEMICAL SOCIETY.

By D. A. Cutler, Chairman of the Section.

[Presented at the Third International Rubber Conference.]

IN regard to what the Rubber Section of the American Chemical Socicty is endeavoring to accomplish, I would say that in the first place it aims to select or to elaborate standard methods for the analysis of vulcanized rubber products, and to define these methods with sufficient precision so that they will yield accurate results.

Having agreed upon such a series of analytical methods, the Section will endeavor to secure for them the endorsement of the American Chemical Society. If successful in this, the methods will then be published as the official methods of the Society. The great advantage of such official methods would lie in the fact that analyses made according to them would possess, in very high degree, impersonal validity. This would be an indispensable factor in cases of dispute, whether forensic or not, and in all cases in which the public might be concerned.

On the other hand, with reference to individual practice, our Section would have no desire to urge unduly the adoption of the official methods, but we do permit ourselves to hope that these methods will so commend themselves by their evident and inherent practicability, definiteness and accuracy, that chemists will be glad to adopt them in their practice.

In the second place, our committee is endeavoring to bring about uniformity in the manner of stating the specifications to which consumers wish the manufacturers of rubber goods to conform.

As to this matter we do not wish to be misunderstood. Our aim is not at all to formulate specifications of any sort, much less to impose them upon anyone. For if it is the province of the consumer to specify the goods which he will accept, and if it is equally the province of the manufacturer, after studying his market, to decide what goods he will make, we have no desire to interfere.

What the Section hopes to do in this field is to provide official terms and phrases and to define them so carefully and precisely that the consumer may state his specifications by means of them, if he will, without any ambiguity.

At present the Rubber Section of the American Chemical Society has over 100 members. These include nearly all the manufacturers of rubber products, as well as a great many consumers. The committee believes itself, therefore, to be in possession of exceptional facilities to serve both these interests.

There is no desire on our part to gain any information, or to pry into any processes or policies which the interested representatives may wish to guard, but it is our sincere desire to do what we may along the lines indicated, to minimize the chances of ambiguity, confusion, and misunderstanding between the manufacturers and consumers of rubber goods.

THE CHEMISTS TO GIVE A COMPLIMENTARY DINNER.

The presiding officers of six of the important chemical societies of the country, including The Chemists' Club, The American Institute of Chemical Engineers and The American Chemical Society, intend to give a dinner on April 19, at the Chemists' Club in New York—and at the same time to present testimonials—to Dr. W. H. Nichols, president of the Eighth International Congress of Applied Chemistry, "in appreciation of his unswerving fidelity to the welfare of chemistry of the United States, and more particularly for his self-sacrificing services in behalf of the recent congress." On the same occasion there will be a presentation to Dr. Bernhard C. Hesse, the secretary, "whose devotion to his duties gave constant evidence of high efficiency." Professor Edward W. Morley, the honorary president, has been asked to preside.

REPORT OF THE RUBBER COMMITTEE OF THE AMERICAN SOCIETY FOR TESTING MATERIALS: STANDARD SPECIFICATIONS FOR RUBBER PRODUCTS.

By E. B. Tilt, Chairman of the Committee.

PRESENTED AT THE THIRD INTERNATIONAL RUBBER CONFERENCE.

THE Executive Committee of the American Society for Testing Materials, appointed in December of 1911, a committee known as "Committee D-11 on Standard Specifications for Rubber Products." The first meeting for organization and the appointment of sub-committees was held in New York in February, 1912, and another meeting was held in New York in March, 1912, for a continuation of the organization and the distribution of work. Since then the sub-committees have been completing their organizations and gathering information relative to their work and data upon which to base specifications. Another meeting was held in September, 1912, in New York, and the present situation with reference to specifications on rubber products and the work of the different sub-committees was discussed. It is expected that a report of material progress, with perhaps one or more specifications covering rubber products, will be presented at the Annual Convention of the American Society for Testing Materials to be held in 1913.

The organization of a committee on Standard Specifications for Rubber Products by the American Society for Testing Materials is due to requests from a number of sources that a committee be organized to draw up specifications covering the following: Rubber Tubing, Air Hose, Steam Hose, Hot-water Hose, Cold-water Hose, Rubber Belting, Gaskets and Rubber Insulation, as well as Rubber Inner Tubes and Casings for Automobile Tires. Sub-committees have been appointed for all of these, excepting Rubber Tubing, Inner Tubes and Casings for Automobile Tires. In addition, sub-committees have been organized to gather data for specifications for rubber valves and for rubber tiling, and it is probable that committees will be appointed to cover cement, rubber rolls and other important rubber goods just as soon as the work at present in hand will permit.

It is expected that the specifications which are to be forthcoming will cover each product with tests, physical or chemical, or both, with instructions for making these tests, as well as description in detail of the construction desired, together with such physical dimensions as will permit of the manufacture of a standard product. It is not intended that other than commercial materials or articles shall be described by these specifications, and where necessary different grades will be included in the same specification, with such difference in the tests as may fix the limits. The intent is not to hamper the manufacturer, but to assist him to establish standards which will be the basis for the making of a reasonable price and which we hope will also be the guarantee of reasonable service.

It is unnecessary to debate upon the advantage from the consumer's point of view, of securing standard material in rubber products. Many of us are familiar with the difference in service given by similar materials, sold by different manufacturers. It is for this reason that standard materials are at this time most necessary.

The question as to what extent chemical analyses will be a part of these specifications, it is impossible now to answer, but each material will be covered by a chemical analysis in so far as our present information warrants such analysis; but the dominating feature of these specifications will be physical tests of as simple a character as is consistent with the characteristics it is intended to expose and the service demanded of the material.

The American Society for Testing Materials is fortunate in being able to select from its members a committee which represents the producer and the consumer, and the regulations governing technical committees are very clear on this point as they read: "On committees dealing with subjects having a commercial bearing, either an equal numeric balance shall be maintained between the representatives of consuming and producing interests; or the former may be allowed to predominate with the acquiescence of the latter. Unattached experts shall be classed with the representatives of consuming interests." This means that a committee will include men having the data relating to the service given by material as well as men having knowledge of the theory and technique of manufacture. It seems to us that the only other essential to make a specification which may be pronounced a success is the use of judgment in its application. It is intended of course to co-operate with all other societies having similar interests in so far as that is desirable, as well as to do such additional research or investigation as may be required.

If I may be permitted to say a word about specifications generally, I should like to add here that the manufacturers who fear a specification have been unfortunate in their experiences with the use of specifications, and I can truthfully say that after a number of years' experience on various materials, bought with and without specifications, that the greatest satisfaction has been on those materials covered by a specification. Referring to rubber particularly I may say that the most satisfaction is gotten with the material at present bought on specification. I am not prepared to say that the unspecified materials are not made as good as they would be if covered by a reasonable specification. It is, however, a fact that a great deal of dissatisfaction exists in the use of these materials. A guarantee of service by a reputable maker is, in the abstract, the sweetest thought that ever consoled a purchasing agent worried with the fear that he was not getting value for the purchase price. It may be possible in a closely consolidated plant to take advantage of a guarantee, but on a large railway, a guarantee on small rubber mechanical goods is probably not worth the time of consideration.

Our policy in drawing up these specifications will be to do justice to manufacturers and consumers alike, and we shall be open always to suggestions or ideas from those interested in our work. We may go further and say that we invite criticism, though we realize that we cannot hope to satisfy all. It is believed that progress is made when the majority are satisfied. We would welcome to membership on our committees any of those here now or any others who are interested, and again we can assure the manufacturer and consumer that our attitude is that of friendliness and a desire for progressive co-operation.

Regarding the use of specifications that we may offer, we believe that the governments of the United States and Canada, and large corporations such as railways, will welcome them, and as a recompense for our work we shall have the satisfaction of knowing that their use will be immediate and general, if not *in toto*, at least in their main essentials.

ASSESSING THE DUTY ON TIRES.

The Board of United States General Appraisers in a case that recently came before it decided that tires should be assessed separately from automobiles. The Collector of New York had held that tires and wheels were assembled articles and they should, therefore, properly be assessed at 45 per cent. ad valorem as "parts of automobiles." But the Board decided when the case was appealed to them that tires should be assessed at 35 per cent. ad valorem as coming under the head of "manufactures of rubber," and that they were not dutiable under the classification of finished parts of automobiles.

EDITOR'S BOOK TABLE.

THE FINANCIER RUBBER SHARE HANDBOOK. TENTH EDITION. London, 1913. The Financier & Bullionist, Ltd. [Cloth, 8vo., 988 pages. Price, 2s. 6d. net.]

THE 1913 issue of the Rubber Share Handbook shows further increase in the number of companies domiciled in England or in English possessions, and controlling rubber plantations in various parts of the world. The general tendency of rubber cultivation during the last few years is exemplified by comparing the number of companies at present operated with those of a year ago. The grand total has during the time increased from 729 to 749, as follows:

	1912.	1913.
Malay States	263	277
Ceylon	201	209
Java	43	44
Sumatra	39	40
Borneo	28	27
India	34	37
Oceania	4	4
Africa	52	49
South and Central America and Mexico	37	33
Rubber Trust Companies	28	29
	729	749

The numerical increase is therefore practically confined to the Malay States and Ceylon. The above figures are not directly shown by the Handbook, but are the result of a careful examination of its contents. Thus in actual numbers the Malay States and Ceylon have together 486 companies, or nearly two-thirds of the grand total of 749. Of this total of 486, about 140 are operated with local capital in the form of "Dollar and Rupee" companies, the others being financed in sterling by British interests.

Of course mere alterations in numbers of companies do not represent their actual development. That information is contained by the "Handbook" as to each company in separate alphabetical order.

The grand total of 749 companies includes 67 new companies and is arrived at by the deduction of 47, which for one reason or another are absent from the new book. There is thus an increase of 20 companies within the year.

This handy volume contains this time 988 pages as compared with 884 last year. It has many well executed illustrations of rubber planting operations, and the uniform manner in which its information is presented, adds much to its value.

ECONOMIC PLANTS IN THE WEST INDIES. AGRICULTURAL Bureau, German Kali Works, Havana, Cuba. [Paper. 88 pages; illustrated.]

In this comprehensive booklet this large German potash concern has grouped a quantity of information upon West Indian economic plants generally, giving prominence to rubber. Experiments at Porto Rico have shown that *Castilloa* will not thrive on hard clay soil, without cultivation or fertilization; the latter course being specially recommended when the trees do not make the desired growth.

OVER THE ALPS BY AUTO.

Hitherto it has been something of an undertaking to cross the Alps, but now it can be done very comfortably in less than two hours in an auto omnibus. An electric automobile service has recently been established at a very considerable cost. The line is about 25 miles in length, running from a point in Switzerland to a point on the Italian side of the Alps. These autos hold about 22 passengers each and make three trips a day in each direction—when the snow will permit.

NEW TRADE PUBLICATIONS.

METAL fittings constitute an indispensable accessory in the application of rubber to industrial or domestic uses; particularly in the case of sprinklers, hose nozzles and hose couplings. In few branches of the metal industry has greater exactness of standard dimensions been attained. This fact is demonstrated by catalog No. 32 recently issued by the W. D. Allen Manufacturing Co., of Chicago, which in its 96 pages forms a complete guide to the buyer of such goods; while its copious illustrations bring each article of importance clearly before him.

Starting with the various makes of spray nozzles, the important article of Lawn Sprinklers is reached, of which there are no less than 71 varieties in the Allen line. Hose fittings next claim attention in the form of holders, couplings, nozzles, clamps, play pipes and other articles, including Allen's "Bull Dog" hose clamp. Fire hose fittings naturally form an interesting section of this booklet, in addition to a large variety of hose racks. The completeness of the catalog is typical of that which marks the productions of this enterprising firm; the established character of which is emphasized by the fact that this catalog is the thirty-second issued by the house.

HOW RUBBER IS GATHERED AND MANUFACTURED.

So much has been written in the papers of late regarding the whole rubber industry and especially about the manufacture of tires, that there is a very general interest on this subject, and many inquiries are received at this office from people who want some general information regarding rubber, its characteristics, the methods of gathering and cultivating it, and the various manufacturing processes. Several manufacturers have issued little booklets that give just this information. Among them might be mentioned a booklet of twenty-two pages, entitled, "From Latex To Tire" issued by the Goodyear Tire & Rubber Co., of Akron.

This little booklet devotes four pages to the consideration of the geography of rubber, gathering it in the native forests, and cultivating it in plantations. The remaining pages are devoted to a description of the many processes through which the crude rubber has to pass before it comes out as a finished tire.

A HANDBOOK OF THE GOODRICH FACTORY.

The B. F. Goodrich Co. has just sent out a handsomely printed little booklet of about forty pages describing what one would see in making a tour through the company's big factory in Akron. One valuable feature of this book is the large number of halftone illustrations—there are fifty of them—which give an excellent idea of the different departments of the factory and the various processes through which rubber passes before it becomes a finished tire. The first few pages of the book are devoted to a description of the rubber forests and plantations.

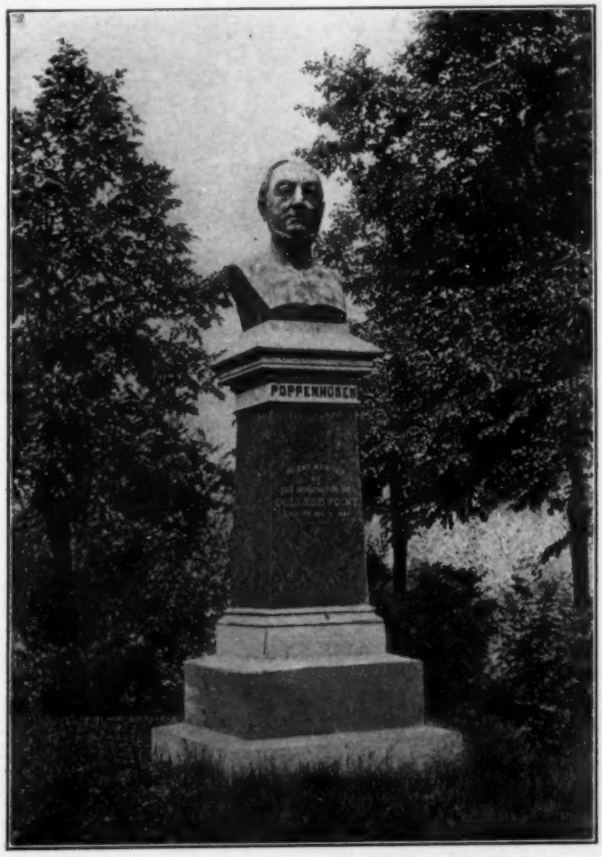
THE INTERNATIONAL RUBBER REVIEW.

A new monthly rubber publication has come into the field; namely, *The International Rubber Review,* a technical and scientific publication devoted to the rubber industry, and particularly to the plantation field. It is edited by Gustave Van den Kerckhove, a well-known rubber planting expert, and its place of publication is Brussels, Belgium. This review is printed in three languages—English, French and German. The initial number is highly creditable. It contains an interesting article on "Artificial Rubber," by Mr. Van den Kerckhove. Another valuable contribution is *"Hevea* Rubber, the Future of Plantations on the Coast of West Africa," by Alfred Chandler, and in addition there are in a department entitled, "Sales of Rubber Plantations," a good many items of interest to people engaged in that industry.

Conrad Poppenhusen, Manufacturer and Philanthropist.

THE rubber industry of this country during its seventy-five years of existence has produced a number of men who have not only been conspicuous for their commercial success, but who have been equally marked for their broad philanthropy—men who not only acquired wealth, but used it generously and wisely for the good of those about them. One of the earliest of the rubber manufacturers to attain marked financial success, and to turn that success to the lasting benefit of the community was Conrad Poppenhusen.

Standing on a plot of ground, given to the former village of College Point, L. I., as a park by Conrad Poppenhusen, and directly opposite the grounds on which his residence was built,



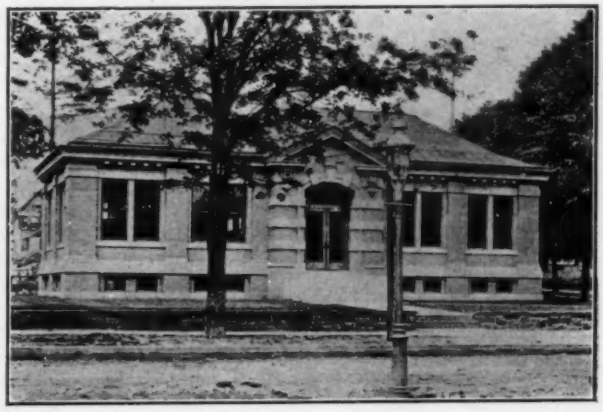
THE MONUMENT ERECTED TO CONRAD POPPENHUSEN, AT COLLEGE POINT.

is a granite shaft with a bronze bust in heroic size, bearing the inscription: "To the Memory of the Benefactor of College Point. Erected November 1, 1884."

In the year following Conrad Poppenhusen's death, citizens of College Point, many of whom had been associated with him in his various interests, bore testimony to their affection and respect for the man by uniting in erecting this permanent monument to his memory.

Mr. Poppenhusen was born at Hamburg, Germany, April 1, 1818, and came to America about 1843. He became a member of the firm of Meyer & Poppenhusen, manufacturers of whalebone at Williamsburg, Long Island. In 1852 this firm secured the license for the manufacture of artificial whalebone, using the newly discovered compound, hard rubber.

In the following year the license to manufacture hard rubber combs was obtained, and in 1854 a plant called "Enterprise



THE POPPENHUSEN BRANCH OF QUEENS BOROUGH PUBLIC LIBRARY.

Works," was built at College Point for the manufacture of artificial whalebone, combs and other articles of hard rubber. The firm name became Poppenhusen & Koenig, which was used until 1867, when the India Rubber Comb Co. was formed. This name was continued until 1898 when the American Hard Rubber Co. was incorporated to include the College Point plant with other hard rubber factories.

In his connection with industrial matters Mr. Poppenhusen showed great foresight, as evidenced by the adoption of the Corliss engines shortly after the invention of the Corliss valve and other devices whereby economy of manufacture was obtained, and in his securing ample land and valuable water grants about his plant, also in providing homes for his employes, and in organ-

CHURCH AND CHAPEL DONATED BY MR. POPPENHUSEN.

izing a mutual benefit association in his works, through which employes were assured aid during absence from work when ill, together with provision for burial in the event of death.

His desire to help those among whom he lived is shown by his gift to the people of College Point in 1868 of $100,000 for the erection and maintenance of the Poppenhusen Institute, in cele-

bration of his fiftieth birthday. This Institute under the management of the Conrad Poppenhusen Association provides free instruction in arts and crafts, industrial and commercial subjects.

In 1872 Mr. Poppenhusen gave $30,000 for the erection of the First Reformed Church of College Point in memory of two daughters who died in infancy.

When the Queens Borough Library established a branch at College Point, the books of the circulating library at the Poppenhusen Institute were transferred to the city, and they are now a part of the equipment of the Public Library in the building erected under the Carnegie fund of New York City, and known as the Poppenhusen branch of the Queens Borough Public Library.

Conrad Poppenhusen was married when about twenty-two years of age to Miss Bertha Kaerker, who died in 1858. Three sons, Adolph, Herman and Alfred were associated with their father in his industrial works.

He was married a second time to Miss Caroline Huetterott, who died in 1903, twenty years after the death of Mr. Poppenhusen. One son of this marriage, Mr. F. A. Poppenhusen, of Hamburg, Germany, is the only surviving member of the second generation.

A grandson, Mr. H. C. Poppenhusen, is now secretary and treasurer of the Conrad Poppenhusen Association, and three grandsons are prominent in business circles of Chicago. Two granddaughters have their homes abroad, and one granddaughter lives in New York.

The illustrations given above show the monument erected in honor of Mr. Poppenhusen by the people of College Point; the Public Library known as the Poppenhusen Branch; and the Church, Chapel and Parsonage of the Reformed Church which were among his benefactions to the community.

RAILROADS RUBBER COMMITTEE.

(Communication from the Secretary.)

IN response to numerous inquiries which this committee has received regarding its activity, the following communication is submitted:

The committee consists of nine members, of whom three represent manufacturers, three consumers, and three public laboratories. The object of the committee has been to formulate standard specifications for high-grade rubber insulation (30% Hevea rubber). In connection with this work it was found necessary to devise a standard procedure for the chemical analysis of such products. The following determinations are being studied:

Total acetone extract—saponifiable, unsaponifiable, hydrocarbons, and free sulphur.

Chloroform extract—alcoholic potash extract, mineral fillers, (free from sulphur) total sulphur, and rubber.

In the course of its studies the committee has considered or tested most of the methods which have been published and several which were privately communicated. The most important types of extraction apparatus have been tried in order to determine the variation in results obtained from the several forms.

The main idea has been to determine the sources of error so that these could be definitely enumerated or eliminated. It is hoped that this will result in closer harmony among results obtained by different chemists, whether they represent buyer or seller.

Considerable progress has been made along these lines, and the committee is doing its utmost to presents its results at the earliest possible date. This will not be done until it has reasonable assurance that the proposed methods of analysis are adequate.

WM. A. DEL MAR.

NEW YORK, February 26, 1913.

AMERICAN RUBBER FOR THE ARGENTINE NAVY.

AN officer of the Argentine Navy, met by a reporter for THE INDIA RUBBER WORLD, at the F. H. Lovell Co.'s naval machinery works at Arlington, New Jersey, spoke of the increasing use of manufactures of rubber in all navies. This officer is here for inspection service on the two large battleships that are being built in domestic yards for the Argentine Republic—at the cost of $23,000,000 for both ships. The specifications under which the contract was awarded did not call for any rubber products. But it is now semi-officially declared that all the rubber products for both ships will be of American manufacture. Provisional estimates put the rubber goods requirements for both dreadnoughts at $78,000. This does not include estimates for some sort of rubber flooring in cabins, hallways and certain parts of several decks. Such flooring will be used. But just what kind has not been officially determined.

So far as is possible steam-actuated auxiliary engines and other kinds of steam power apparatus will not be used on these ships, as compressed air power will be used instead. This ensures the liberal use of rubber packing. Steam-actuated auxiliary engines and long runs of steam pipes, in which defective unions together with inferior metal, spun-yarn and leather packing were used by the contending fleets in the great battle of the Japanese-Russian War, brought about almost as many deaths and severe wounds through steam pipes fractured by projectiles, as the medical corps reported as due to cannon fire. This explains the elimination of steam-actuated auxiliary machinery, so far as is practicable, by all navies since the medical reports of the navies of Japan and Russia in the late war became accessible to naval engineers and constructors. It is a remarkable fact, that during the Civil War all our naval commanders reported strongly against the inferior oakum, spun-yarn and leather packing then in use, and as to defective unions and long runs of steam pipes, the use of which as Admiral Goldsborough reported, "caused greater loss of life, and more wounds to officers and men throughout the war than occurred from engagements between ships."

The historic "Monitor" narrowly escaped going to the bottom in a violent gale on her first voyage, because an old-schpol naval officer insisted upon removing the rubber ring set within a bronze frame at the base of the turret, and which John Ericsson had designed to prevent water from getting into the turret and thence into the engine room. The fossilized officer took out the rubber and bronze rings and substituted strands of oakum soaked in grease, and he caused the removal of the rubber belting from the air and water pumps. The result was, that off Hatteras, the great waves washed out the oakum, and left a space of sixty-four feet in circumference and two inches high as an open water-way down which the water rushed, and soaked the leather belting so that it slipped, and thus the choking coal gas drove out the engine-room crew, and left the vessel at the mercy of the gale until it subsided. After that, Ericsson brought about a return to rubber packing and belting on the "Monitor." But once more, when the vessel was being outfitted to go on a sea voyage, an old-school naval officer had the rubber packing and belting removed and rope-yarn packing and leather belting restored. In a gale off Cape Hatteras, the turret packing was washed out, the engine room was flooded, and all who were unable to reach the naval towboat that stood by were lost, and the "Monitor" went to the bottom. So far as the writer hereof knows, this incident that places the blame for the loss of the "Monitor" on defective packing and belting has not been in print. THE INDIA RUBBER WORLD's representative noted it down a few days ago from the lips of the last surviving officer of the "Monitor," when she was lost. He lost an arm by being caught in the loop of a hawser that bound the "Monitor" to the towboat that rescued all who escaped from the vessel which revolutionized naval warfare.

Protection of Intellectual Property in Relation to Chemical Industry.

[EXCERPTS FROM A PAPER READ BEFORE THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, AT THE DETROIT MEETING, DECEMBER 4, 1912, BY DR. L. H. BAEKELAND, PRESIDENT.]

THE mass of unthinking people, as well as those whose views are predominantly guided by precedent, have little or no conception of the natural rights of intellectual property. It is difficult to teach such people that adequate protection of intellectual property is abundantly more beneficial to the community at large than to the temporary individual possessors of these rights.

Yet these same people consider as sacred and inviolable, any other property rights as soon as the latter relate to chattels or real estate, whether such rights were obtained by purchase, by inheritance, by gift, by privilege, by labor, or by any other way.

When, however, it comes to recognize the claims of ownership to intellectual property, the result of the truly creative effort of the citizen, we butt right away against some stubborn conceptions, which have petrified into the code of our long established laws.

If Tom steals Dick's two-dollar scarf pin, Dick will have little trouble in putting Tom in jail, even if Dick himself has obtained his pin by questionable methods. But when it comes to protect even for the short period of 17 years, the most logical, the most legitimate personal property, intellectual property, as embodied in patent rights, with all that it involves, with enterprise depending thereon, based often on the work of a life-time, then our law courts are woefully deficient, on account of uncertainties, delays and enormous expenses connected with the adjudication of patent rights. All this works overwhelmingly in favor of the litigant with the well-filled purse, the large corporation.

Yet, no country in the world has expressed in a fairer and broader spirit, the rights of intellectual property, than the United States, in Article 1, Section 8, of the Constitution: "Congress shall have power to promote the progress of science and the useful arts by securing for limited times to authors and inventors, the *exclusive* right to their respective writings and discoveries."

This proclamation lifted the right of a patentee at once, far beyond the mere privilege conferred by most countries, which grant patents not only to the real inventor or originator, but also to those who are first to introduce unpublished inventions into their respective countries. With some legitimate pride, we can say that in this respect, at least, American patent law stands head and shoulders above the laws of Germany, France and England.

The wisdom of these provisions has been abundantly proved by subsequent events. Only a man stubbornly blind to evident facts, will deny that just those countries which have the most liberal laws for patent protection are also those which have taken the lead in the industrial and scientific development of the world.

Up to about thirty years ago, our patent system covered tolerably well the purpose for which it was intended. It stimulated individual inventions and promoted numerous private enterprises. Since then, with the extraordinary growth of our nation, with the tremendous increase of agglomerations of capital for industrial enterprises, and more especially with the astonishing increase in the ramifications of applied science, our patent system has become totally inadequate to the needs of the country; it suits our new conditions in about the same way as baby clothes fit an overgrown boy.

Our patent system, although based on an excellent fundamental law, has now degenerated in a set of exceedingly complicated technicalities of law practice, a system of legal acrobatics, whereby any contestation before the courts can be turned into "perpetual motion" to the advantage of wealthy litigants, and whereby the individual patentees of slender means and the small industrial concerns find themselves under smothering disadvantages when opposing rich antagonists. In this way our patent system, instead of accomplishing its intended purposes of stimulating individuality, simply reinforces the rich and big industrial enterprises, and discourages the individual inventor unprovided with a liberal bank account.

It is true that on November 4, 1912, the Supreme Court of the United States, has promulgated revised Rules of Practice for the Courts of Equity, which intend to simplify our methods of litigation. Unfortunately, this is only a half-way measure, leaving still abundant opportunity for the tactics of delay, chicane, and expense which have too much disgraced American patent litigation.

These new rules might gain in efficiency, if they were supplemented by the creation of a final court of patent appeals. They might be made incomparably more efficient, if they could be strengthened by a system whereby the adjudication of the validity of patents does no longer devolve upon judges who do not possess the technical or scientific preparation, required nowadays for discerning the merits of complicated patent questions. Some of the far-reaching details of scientific technology absolutely baffle the comprehension of those who have no preliminary technical or scientific training. Certain problems of chemistry and physics involved in many patent suits can no longer be understood by an intelligent judge, if he has not had long and systematic preliminary training in that branch of knowledge. I do not deny that an intelligent judge can be coached and instructed by long, tedious, time-robbing methods, even in intricate scientific problems; but his education has to be made over again for each special case. After you have made a chemist of him for one case, the next adjudication will require the knowledge of a physicist, an electrician, an engineer, and so forth.

Even under the new rules, it will not be difficult to drag on a case by presenting an unrestricted amount of testimony taken before an incompetent examiner, and by calculating every step so as to tire out your opponent, and so as to lead the judge into doubt and error, by swamping him with endless contradictory expert testimony calculated to befog the issue instead of making it clear. Such tactics are relatively easy for the litigant, who, for that purpose, can afford to pay accommodating experts and skilful lawyers. Even if at the end, the judge, after laborious and conscientious efforts, masters the technicalities of the case and reaches a good decision, much needless time has been wasted. All this might easily be avoided, and judges might be saved the trouble and responsibility of going in every single case through a different scientific or technical training, if their intervention could be limited to what they are more competent for, namely, to determine what claims have been infringed and in how far this infringement entitles the patentee to damages.

That such a method of settling patent suits is quite practical, is shown by the example of Germany. In that country, patents are allowed after preliminary examination, just like here; but, after the patent is granted it can be attacked for annulment or revocation before a competent court in the Patent Office. So that any party who is sued for infringement of a patent which he thinks is invalid can avoid temporarily the adjudication of the infringement issue by starting an annulment or revocation suit. In the meantime, the courts in which infringement cases are examined have to take the patent as it stands, and it is only left to them to interpret the scope of the claims, and to what extent these claims have been infringed.

This relieves the equity court of all the complicated questions

of validity or non-validity of a patent, and puts this whole matter in the hands of a properly constituted court of experts, who can handle this subject with incomparably less hesitation, or delay. Besides this, the whole system of practice in the German Patent Office tends towards systematic elimination of invalid patents. After an examiner has decided upon preliminary allowance of a patent, the claims and specifications are open for public inspection, and for a period of two months, anybody whomsoever can file arguments against the final grant of the patent. In this way, the nation does not too lightly confer patent privileges and has furthermore, the benefit of the free advice of any experts in the art, who may advance good reasons for non-allowance of the claims, of which the examiner was not aware, when he rendered his first decision. These opposition proceedings give added thoroughness to the work of the examiners. They are relatively inexpensive and do not necessitate the intervention of law counsel. Sometimes they delay the issue of a patent, if there is any good reason for doing so. On the other hand, a patent that has successfully withstood vigorous opposition proceedings is very much strengthened thereby; this, in itself, is a very valuable compensation for any delays to which the patentee may have been subjected. In other words, by that system, a good patent becomes stronger, while a defective patent application is easily weeded out. A similar system of public opposition exists here in the United States in relation to the granting of trade-mark rights, and seems practical enough that it could be extended to our methods of allowing patents.

All officers of our patent office, high or low, should be made independent of any political favoritism; they should be better paid, with more opportunity for promotion, according to merit; their work should be made simpler by an improved office equipment and increased facilities for a thorough search; furthermore, our unnecessarily complicated and expensive methods of interference proceedings should be simplified.

With these reforms, there is no doubt that we can organize right in the patent office, a competent court, supplemented by the Court of Appeals of the District of Columbia, for deciding, in a very expedient way, all questions of validity of patents.

This Court of Appeals, because it is situated right in Washington, would have easy and immediate access to all the records of the Patent Office; by this fact alone, it would have superior opportunities for prompt and efficient work.

At least some of these facts seem to have been very well recognized in the masterly report of Hon. William A. Oldfield, chairman of the House Committee on Patents. (See report No. 1161, on H. R. 23417, August 8, 1912.)

Unfortunately, his proposed Oldfield Bill (H. R. No. 23417), with a regrettable lack of consistency, neglects utterly the paramount issues, and busies itself with secondary regulations which, if carried out, will practically put a penalty on patented articles.

The new provisions of the Oldfield Bill aim at curtailing the power of patents in the hands of trusts or large corporations; but, in doing so, new provisions are introduced which will create endless new opportunities for protracted litigation.

The Oldfield Bill overlooks the axiom that whatever increases the expense or delays of litigation, is a very potent weapon in the hands of large corporations, which they can hurl against the poor litigant who stands in their way.

The saddest thing of all is that the new Oldfield Bill tries to abrogate the hitherto accepted principle established by our Constitution, that a patentee has the right to license or sell his patent on whatever terms he pleases. It has been feared that this principle, if carried too far, might become a dodge for avoiding the Anti-trust Laws. Since the decision of the famous, but harmless Dick case, the most hysterical exaggerations have been published on this subject. Fortunately, since then, the recent and unanimous decision of the United States Supreme Court in the "bath-tub trust" case, November 18, 1912, does away with all these redundant arguments and settles, beyond doubt, the principle that, patent or no patent, unlawful combinations in restraint of trade can be stopped by the Sherman Law.

The Oldfield Bill, in its eagerness to avoid any hesitation on the subject, goes one step further, and unfortunately, one step too far. It puts so many restrictions on the sale of a patent article, or on a patent license, that it may become a positive disadvantage to transact business by means of patents.

Examined in the last analysis, it threatens a business based on patented processes or patented articles, with penalties which unpatented articles thus far are not subjected to. It takes the proposed patent law as a pretext for saddling a patented article with restrictions which have not heretofore been formulated for non-patented goods.

This unexpected paradox, promoted by the Oldfield Bill, is distinctly in opposition to the rights of intellectual property conveyed by the words and the spirit of the Constitution, and if the Oldfield Bill becomes an effective law, it will be the saddest blow ever given to our patent system. It will do comparatively little harm to large business interests, because for them, there are many ways of circumventing its provisions; on the other hand, it will cause great discouragement to smaller enterprises which, until now, have held the hope of matching inventive genius and initiative against the money power of big organizations.

Another unfortunate miscarriage of purpose in the Oldfield Bill is its provision against so-called wilful "supression" or "non-use" of patents. It does not take into consideration that in numerous instances, a patentee or an assignee possesses a series of so-called alternative patents, which can be used to bring about identical or similar technical results by modified means. Among such alternative patents, the best or the most suitable are used, absolutely irrespective of any other reason or intention to suppress their use. Yet without the exclusive possession of every one of these patents, the invention would not sufficiently protect against competitors, and the field would be so much reduced as not to make it worth while to put one's best energies to the development of the invention. In most cases, it would become a material impossibility for a small concern to maintain the exclusive ownership of its patents, if it had to go to the enormous expense of working simultaneously all its "alternate" patents; by omitting this expensive technicality, it would be exposed to the risk of being compelled by its competitors to grant a compulsory license; this would practically annihilate the advantage of exclusive ownership as expressed by the constitution. There again large concerns would be at an overwhelming advantage, because they can at an expense relatively small for them, equip the necessary appliances for remaining within the technical provisions of the law. In the meantime, they could easily harass their financially weaker competitors in exacting from them compulsory licenses which would break up the only prospects of successful competition which the smaller concern might have possessed, until then, in its patents.

I have no doubt that this bill has been framed with the best intentions for the interests of the country. Unfortunately, the framers of this bill do not foresee the far-reaching and dangerous effects of its provisions.

ENGLISHMEN WANT AMERICAN SOLID TIRES.

THE representative of an English firm of motor truck manufacturers opening up a sales business in Canada informs an American consul that he would like to receive catalogs and price lists from American manufacturers of detachable solid rubber tires suitable for motor trucks carrying a load of one to four tons. The number of the consular report is 10546.

THEY WANT AMERICAN RUBBER SHEETING.

An American consul in a European country states (Report No. 10,395) that a local firm desires to be placed in communication with American manufacturers of rubber sheeting for hospital use, with a view to making direct purchases or of representing such firms on the local market.

TESTING OF GERMAN EAST AFRICAN RUBBER SOILS AND PRODUCTS.

DURING his visit in 1911 to German East Africa, Dr. Eduard Marckwald, of Berlin, in addition to investigating actual conditions on many points (as reported in THE INDIA RUBBER WORLD, March, 1912, p. 269) laid the foundation of researches, which have since been more or less completely carried out, particularly as to fertilizing agents.

These tests, made in East Africa, are fully described in the latest quarterly report of the Colonial Rubber Section of the Henriques Laboratory, Berlin. In making them three samples of chemical compounds, weighing 145, 185 and 145 pounds, were prepared, with various proportions of sulphate of potash, superphosphate, bone meal and sulphate of ammonia. In a fourth sample the first of the agents named was omitted; the sample weighing 100 pounds. These samples were incorporated with the soil by a thorough mixing, one field being left unfertilized, for comparison with the three others. For convenience of handling, these samples were each divided into three.

According to the report of the Henriques Laboratory, the results obtained are by no means uniform or conclusive as to the effects of artificial fertilization. This fact, it is added, should cause no surprise, as experience with salts and other fertilizers has often shown them in virgin soil, to be directly prejudicial, or to have no effect. The above-named tests were unofficial, but official tests have led to similar conclusions.

Apart from the question of the effects produced by artificial fertilization, the report urges that results obtained show German East African plantations to be in a position to deliver first class rubber, adapted for all technical requirements. The German Potash Syndicate contributed financially to the carrying out of the above-named experiments.

SOILS FOR RUBBER.

The experiments made in Germany by Dr. Wohltmann, of Halle, and Dr. Marshall, dealing with the properties of South American soils, indicate that the demands of rubber plantations for nutriment from the soil are not very exacting; the samples of South American soils showing only an extremely small proportion of nutritive substance. The results of experiments have been reprinted from the "Tropenpflanzer."

Other experiments indicate the importance of fineness and deepness in soils intended for rubber cultivation. Heavy soils, of the nature originally preferred, have given relatively unfavorable results. Soils in West Africa, Ceylon and Sumatra, which had at first been condemned on account of their low proportion of nutriment, have now been approved for rubber.

SAMPLES EXAMINED.

Samples of rubber received from East Africa included two of *Manihot* rubber, which, after being treated, proved to be a first-class product.

An interesting group of five samples was received from Mr. R. Fyffe, director of the Botanic Gardens, Uganda. One sample was of *Clitandra Orientalis* and showed good working qualities, while a sample of *Hevea* rubber was very pure and proved in working equal to wild Pará soft cure. A third sample of *Kickxia*, coagulated with tannic acid, was very clean; producing a good rubber after normal working. Another sample of *Manihot*, tapped according to Mr. Fyffe's process and coagulated with water, proved well vulcanized even after an hour's heating. It would not dissolve (a fault common to *Manihot* rubber); the quality only proving a better class of second grade. The fifth sample was of *Landolphia Davei*, which likewise was perfectly clean, and was coagulated with acetic acid, but could only be designated as second grade. Its working qualities corresponded with what might be expected from its origin. A sample from Togo was good and fully equal in value to the best East African grades. From Kamerun a large number of samples was received, produced by various methods of coagulation. In addition a sample of *Kickxia* came to hand from the Gold Coast Botanic Station.

In all, 63 crude rubber samples were examined. The work of the Laboratory was, however, not confined to rubber; castor seeds from New Guinea, and other tropical products having also been dealt with.

Other subjects handled included the determination of albumen in rubber, on which the work of the laboratory is complete, and the results of which will soon be published.

RUBBER CULTURE IN SOUTHERN ASIA.

IN a recent discussion of the above question in the "Tropenpflanzer," Herr Emil Helfferich, of Hamburg, supplemented his former investigations in that direction. Continuing its earlier review of Herr Helfferich's work, the "Annales de l'Institut Colonial" of Bordeaux remarks that plantation rubber has now taken possession of the market; everything pointing to its soon occupying the leading place. The first yields had aroused considerable enthusiasm, the most fantastic calculations having been made as to the future of the plantations. The results achieved and the analysis of the reports published by some companies, today allow of a more just appreciation of the value of these enterprises, and of formulating some rules as to the organization of rubber plantations. It is no longer a question of the varieties to cultivate, *Hevea* more and more replacing all others; vines and *Maniçoba* being almost abandoned on the African continent, in the same way as *Castilloa* and *Ficus* are in Southern Asia.

Hevea plantations, it is remarked, should only be established in well drained soil, freed from the roots of old trees, or ligneous debris, which might afford a home to that dreaded parasite, the *fomes semistotus*, which attacks the roots. Some of the best known estates, such as Batu Caves, Glenshiel, Highlands and Lowlands, Federated Malay and Vallambrosa, have had to make considerable sacrifices in combating this pest.

GENERAL PLANTATION REQUIREMENTS.

In the choice of seeds, it is necessary to select those from healthy trees, in regions free from disease, at an altitude and under a climate as near as possible to those of the plantation contemplated.

As to distance, opinions are divided as to whether it is best to give the trees enough space for them to attain their full development, or to place them close together, in order to better utilize the soil, and thus facilitate the work of the plantation. An average distance of 26 feet is recommended by Herr Helfferich, making about 150 trees to the acre. This number of trees would be subject to reduction where there is risk of disease being propagated or of yield diminished.

As to interplanting, Java and Sumatra, it is added, have advantages over Malaya in "Robusta" coffee, but this does not grow uniformly well. It needs a deep soil rich in *humus*, and ought to be planted at same time as the *Hevea*.

English planters, it is remarked, favor clean weeding as a preventive of parasitical diseases, but it is calculated to do harm to the soil in plantations on sloping ground. Dutch planters, on the other hand, seek to avoid this result by covering the soil with vegetation, which impedes the growth of weeds and increases the quantity of azote which would be utilized by the *Hevea*. This system, however, renders it more difficult to combat diseases attacking the roots; the managers of the Kuala Lumpur and Glenshiel estates having pulled up the *Passiflora* and other plants which covered the soil of their plantations.

Excessive pruning favors the growth of the trunk and the widening of the top of the tree, but it exposes the tree to the action of the wind, and cutting should therefore be practised with caution. It should, however, be recalled that the yield in

general depends on the size of the trunk, which it is naturally endeavored to enlarge as rapidly as possible. Attempts have been, however, wrongly made to tap trees from three to five years old, without considering the medium quality of the rubber they might furnish.

Definite rules for tapping, it is remarked, can only be fixed after long years of experience, but in most cases the half herring-bone on one quarter of the circumference has been adopted. In this way the bark is spared as much as possible. Each zone tapped rests for three years; time being thus given for its wounds to heal before fresh incisions are made.

No positive indications are available with respect to the time needed for the regeneration of the bark of old trees; nor as to the age when they cease to be tappable. This, it is added, is all a matter of experience and observation.

COST OF UP-KEEP.

Cost of up-keep varies according to the ages of the trees on the plantations. As the shade becomes more dense, spontaneous vegetation becomes more rare, and the cost of up-keep diminishes. The following costs, given by leading companies, are quoted:

	Up-keep per acre, 1910.
Kapar Rubber Estate (50 per cent. in bearing)	$7.12
Harpenden (51 per cent. in bearing)	4.32
Highlands & Lowlands (85 per cent. in bearing)	7.61
Pataling (60 per cent. in bearing)	7.80
Kuala Lumpur (productive surface)	3.23
Kuala Lumpur (unproductive surface)	7.75

The figures of Kapar, Highlands & Lowlands, and Pataling include not only the regular expenses of up-keep, but also those caused by the removal of trunks and roots. Eliminating these expenses, which really belong to the initial cost, it is estimated that the yearly average per acre equals $5 for a plantation in full yield. This figure, it is added, is inferior to the cost of up-keep of tea and coffee plantations, which for the same surface and period represent $15 to $20.

YIELDS PER TREE AND ACRE.

The reports of different companies show various yields, being based on an average of 150 trees to the acre, while accidental destruction or loss through disease reduces the average after the fourteenth year to 125.

	Age of trees.	Yields per year per acre. lbs.	Yields per year per tree. lbs.
Batu Tiga Estate	4	90	0.60
Damansara	4	92	0.61
Bikam	5	250	1.66
Seafield	6	450	3.00
Seremban	6	572	3.80
Klanang	10	741	3.93
Seremban	11	870	6.96
Federated Malay	12	1,030	8.24
Federated Malay	13	1,147	9.18
Kuala Lumpur	14	1,302	10.42

Experience has shown that the yield of trees regularly tapped increases from the fourth year up; these results in various cases surpassing all expectations. At the same time, it is added, it is better only to count on a regular production of 500 pounds to the acre. One English rubber expert will not endorse a higher estimate than a maximum production of 300 pounds per acre.

The quality of rubber depends not only on the nature of the soil and the climate, but also on the age of the trees producing it. Young *Heveas* give a resinous product, inferior in value to that of older trees.

FIRST LATEX.

It is further added that as long as no uniform method of coagulation has been found, based on the principle of smoking, it will not be possible for the different plantations to deliver a uniform product. However, a system of classification has been elaborated in London, Antwerp and Hamburg, where the term "First Latex" has been adopted as signifying a plantation rubber made from the latex of *Hevea Brasiliensis*, collected immediately after tapping, and not containing any traces of scrap or foreign latices. To be classed as belonging to this type, the rubber ought to be nervy, without any admixture of earth, and must not be mouldy or sticky.

"Prime Plantation" rubber formerly commanded in the London market 4*d*. to 8*d*. more per pound than "Fine Pará"; the reason of this difference being the smaller loss which plantation rubbers suffer in washing. In Hamburg, in contracts for later delivery, "First Latex" is valued at the equivalent of about 3 pence per pound above "Fine Pará."

These facts show the strong position which plantation rubber has attained on the market, and which is expected to become more marked as the quality is improved.

PRICE OF RUBBER LANDS.

When planting companies first started in Southern Asia, land was very dear, as much as £5 sterling ($25) per acre having been paid. Today, however, matters are different. Not only can good lands for rubber plantations be obtained, it is stated, at 10*s*. ($2.50) per acre, in Malaya and the Dutch Indies, but certain companies which had acquired too extensive holdings are trying to resell part of them at low prices.

LABOR.

The extension of Asiatic rubber cultivation depends to a great extent upon the question of labor; the scarcity of which has been exaggerated. The cost of hiring coolies has, it is true, considerably increased, but the immigration of Chinese and Tamils has furnished the Dutch possessions with an abundance of workers. The number of laborers arriving there amounted in 1909 to 24,568; in 1910 to 58,616; while for the first eight months of 1911 70,000 arrived, compared with 45,000 for the corresponding period of the preceding year. India and China furnish the greater proportion of the immigrants to the Malay States.

Great efforts have been made by the Government of the Dutch Indies to improve the condition of the coolies, particularly on the east coast of Sumatra. Before granting permission for estates to receive workers, the administration is thoroughly posted as to their situation and their sanitary conditions, the mode of living and the medical service available. The establishment of workers' settlements under the most favorable hygienic conditions forms an important step. The scarcity of coolies on certain estates is attributed to the insufficient measures there adopted regarding their food and lodging. Complaints have been heard from Java as to Chinese workers, who are more expensive than Tamils, while their work is defective. On the Malay Peninsula and in Sumatra tapping is effected by contract workers, who remain a long time on the same plantation, regular and satisfactory work being thus ensured; while in Java, where the work is done by free workers, good results are not easily obtained.

Such are a few of the points brought forward by Herr Helfferich in his review of the subject covered.

EAST INDIAN POTENTATES ADOPTING AMERICAN AUTOS.

According to the "Manila Daily Bulletin," East Indian sovereign princes are fast abandoning their gorgeous formal equipages of state for motor cars made in the United States. Five Maharajahs have lately become owners of American automobiles. The upper classes in India generally are developing a similar tendency, owing to the saving of time thus effected.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

A GENERAL SURVEY OF THE SIX WEEKS' STRIKE.

THE strike in the Akron rubber trade, mention of which was made in the March number, which arose in the Firestone Tire & Rubber Co. through a dispute over wages, due to a new schedule for tire finishers, spread rapidly through the Firestone company, and later through the other rubber companies in Akron until almost two-thirds of the rubber employes in Akron had quit work. These quit work for various reasons, a small minority on account of some alleged grievance in regard to wages, a large number in sympathy with the few who claimed a grievance, and probably a still greater number either through fear or because of their work being dependent upon that of some other person who was on a strike, and consequently the material could not be supplied to them.

To secure recruits from other companies, the strikers had large parades, part of the time headed by a small band and a number of women, which continually marched around the rubber factories, using every form of argument and invective to try to get recruits. At first, this action was peaceable and practically no opposition was offered by the city police or county sheriff's office, or by the rubber manufacturers, but when this matter of marching in a body failed to secure recruits, the strikers became unruly and tried to force the employes who were still working, either by threats or actual bodily harm, to leave their employment. The various rubber companies had prepared for this by erecting board fences around each of their plants and had guards on duty inside the fences.

Then the citizens of Akron formed a "Citizens' Welfare Association" and tried to get the strikers to go back to work, subject to a reconsideration of whatever grievances they might have by the rubber companies at a later time, but this the strikers refused to do.

A rubber worker who left the factory with the intention of striking was hustled down town and, without any explanation whatever, was generally induced to sign an application to the I. W. W., whereupon he paid the initial fee and was given a red ribbon, and to all practical intents and purposes was a regular member of the I. W. W. As soon as many of the workmen understood the real purpose of this organization and their former methods of conducting strikes, they ceased to wear the red ribbons and took no part in their matters whatever.

The I. W. W. then commenced their chain picketing, which consisted of a long single file of men marching very close together at some opportune place, generally the entrance to one of the rubber factories, up one side of the street and down the other, so that the chain remained unbroken, persuading any person who happened to pass to join them, and if they could not be reached by persuasion, they hurled the worst form of invective, and if they could not be reached in this manner, would grab their dinner baskets, and scatter the contents upon the streets. At other times, the men themselves would be grabbed and hustled along rudely, and sometimes beaten. This form of picketing became a menace because some of the leaders of the I. W. W. not only encouraged open violence and disrespect of law and order, but took any means whatever necessary to make their strike effective, not excepting personal violence, injury to property and sabotage. At this point, many of the rubber workers who had not gone on the strike became fearful lest they would receive bodily harm.

The Citizens' Association, which up to this time had been formed wholly for persuasive methods of securing an end to the strike, now took the form of a Citizens' Police Association, and approximately 1,000 able-bodied men were sworn in and furnished with a policeman's badge and a club, and the use of about fifty automobiles was given to the city for rapid reconnoitering. The city was placed under martial law by the sheriff, and the citizens' police, together with the city police and deputy sheriffs, were placed wherever needed, many going on duty at five o'clock in the morning. Parading and general picketing was prohibited and, after several clashes with the citizens' police and the city police, it was effectively stopped. Then guerilla warfare was started throughout the city, where lone workmen were held up and beaten by strikers. This was broken up by means of a large number of automobiles, manned by four or five policemen rapidly reconnoitering from one point to another where strikers or rubber workers were apt to be, especially at the time the workers were going to work or when they were coming from work. A large number of slater's tacks were thrown upon the streets and a number of these automobiles had punctured tires, but instead of frightening the owners of the automobiles it only made them more determined and more vigilant. Forty or fifty undesirable persons who had come to Akron during the strike, and who had no known means of support, were ordered out of town and they left immediately. This seemed to have the effect of completely stopping the guerilla warfare.

During the first week or ten days of the strike, the rubber factories fully supplied all their branch offices with tires and all kinds of rubber goods to fully protect their trade against any bad results which might come from the strike. They provisioned their plants, and offered any man who did not desire to go home necessary sleeping quarters and meals. A great many meals were served to the employes, but not many took advantage of the sleeping provisions offered, as they felt safe to go to their homes from work and to return to work in the morning.

Before the Citizens' Police Association was formed, the mayor of Akron, believing the militia necessary, asked the governor of the state to provide militia, which was refused. This compelled the citizens to give aid to the police of the city of Akron and the sheriff of Summit county, each of om had been very vigilant and effective, cautious and careful, yet firm; and the fact that there was practically no blood shed in the whole strike where thousands of men were out of employment, is due largely to the foresight of the mayor in closing the saloons for over two weeks, and to the efficiency of the Akron police and the sheriff of Summit county and his deputies, backed by the Citizens' Association and the good common sense and high intelligence of the Akron rubber employes.

There were several elements in this strike which stood out prominently. The first is that whatever dissatisfaction existed arose chiefly from a cut in wages. With few exceptions, the Akron rubber worker is contented with the working condition of the various factories, the one complaint being that a system of payment is used whereby a man is paid for his work and that he must "hustle" to earn what he feels is his day's wage. Secondly, the strike had a very depressing effect upon the stock of the various rubber companies and on business in general, which, however, is gradually recovering. Third, practically all the buildings of the rubber factories have been built within the last six years, and light, fire protection, space for working, toilets, hospital service and everything necessary for the convenience of an employe have been provided better probably than in nine-tenths of the factories in the United States in any line.

Another fact which stands out pre-eminently is that these immense organizations for the production of rubber goods have been built up chiefly within the last six years. Six years ago, the majority of the superintendents knew every

man in their employ. On account of the rapid growth of the work, the immense amount of new machinery that has been invented and placed in the factories, the great diversity of labor, where six years ago one man completed a whole article himself, this same article at present may be made by at least a dozen persons. This has caused a constant change of work and, consequently, a change of wages and many times a shifting of labor and many new laborers, so that this is now impossible for the employer; and no matter how determined and careful he may be to bring about a maximum of efficiency, and at the same time the greatest comfort for his employes, many causes for grievance have arisen, which are generally of minor importance and would be readily overcome and provided for by the manufacturer, if they were specifically and clearly called to his attention. The officials of the various rubber factories have stated time and again that they would be glad to discuss with any of their employes any differences they may have and, if possible, settle these grievances amicably and satisfactorily to both the employer and employes. This sometimes has been impossible on account of some sub-foreman or inspector who was arbitrary and overbearing, and, to make a good showing for himself, would not report these small differences to his superiors, and if he did report them, would do so in an untruthful manner. This strike no doubt has called the attention of the rubber manufacturers to many of these small grievances which they will remedy, and would have remedied even if no strike had occurred, if they had been properly placed before them.

The American Federation of Labor in no way sympathizes with the I. W. W. and gave them no support in this strike, the principles of the two organizations being diametrically opposite.

The strikers, through the I. W. W., after almost two weeks of meetings and argument, sent a scale of wages which they desired, which called for from 25 per cent. to 100 per cent. increase, which demand was absolutely refused.

The Senate of the state of Ohio appointed an investigating committee, which has been taking testimony in Akron for several weeks, both sides being represented by attorneys. As a result of this investigation it was brought out that the average wage of the Akron rubber worker is something like $2.60 per day; that the average wage paid in the United States is about $1.40 per day; that a few of the girls working in the rubber factories receive small wages, but that this is the exception rather than the rule; that the wage of the day-worker in the Akron rubber factories is practically the same as that of the average day-worker throughout eastern Ohio and, if anything, the work more steady; that there are some lines of rubber work that are not the most healthful, but that the factories have done their utmost to remove, as far as possible, these unhealthful conditions; and that the factories have tried to provide safe and suitable places to work and surroundings for their employes.

On March 24, at least three-fourths of the rubber workers were back in their places working and many more going back each day, and a number of new men have been hired who will necessarily need to be trained, so that the maximum efficiency of the rubber plants cannot be expected for several weeks and perhaps a couple of months.

The consensus of opinion among the I. W. W. leaders is that the strike will be declared off by them about April first. The rubber companies so far have refused to re-hire the active participants of the I. W. W., believing that they may follow the teachings of their leaders and put in effect sabotage, which is the revenge of a lost cause inflicted upon the material and machinery of the employer.

The basis of the I. W. W. movement is that all wealth is created by labor, that capital has no rights whatsoever, that the control and ownership of all factories should be given to labor and that this should be brought about, if possible, by peaceable means; if it cannot be brought about by peaceable means, then by any means whatsoever. This doctrine is revolutionary and anarchistic and is wholly opposed to the principles upon which our government is based. The writer believes that strong laws should be passed that where violent acts are the result, or probably will be the result, of speeches setting forth such doctrines, that the instigator should be punished at least as severely as the perpetrator.

The writer suggests that, as it is to the advantage of the rubber manufacturer and the public, as well as the employe, labor should secure a fair and reasonable wage; that wage reductions generally are caused by the fierce competition in the rubber trade, which competition is becoming more severe from year to year; and that the rubber manufacturers should, among themselves, adopt a minimum wage both for men and women, under which they will not go, and thus avoid future wage reduction—the natural result of increased competition—and the strikes that such reductions are always liable to provoke.

* * *

Akron was visited by an unprecedented rain of over three days' duration, which made every brook a running river. This created an immense increase in the Little Cuyahoga River, and at least forty homes and business places were washed away and destroyed as if of so much kindling. On account of the vigilance of the city fire and water departments, only two persons lost their lives.

The rising of the waters caused The Goodyear Tire and Rubber Co. and the Buckeye Rubber Co., the Akron branch of The Kelly-Springfield Rubber Co., to suspend operations for a few days, the water having reached their engine rooms. The water stopped the fires in the power house of the N. O. T. & L. Co., so that the city was without car service and in darkness for two days and a night.

Over half the bridges and culverts in the county have been washed away, and for a short time railroad and street car service to all outside towns was suspended.

The large reservoirs which supply the rubber plants, with the exception of the Big Reservoir, remain intact, and the Big Reservoir, on account of an overflow at one of its feeders, was lowered about nine feet.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

THE past month has been an exceedingly active one with the Labor Union advocates, and strikes have occurred in more than a dozen plants and trades. The rubber industry has not been hit as hard in this respect as was first anticipated. Notwithstanding the strikes and the strike talk, many plants are working day and night shifts.

* * *

Former Mayor Frank A. Magowan, who in former years was a power in the rubber world in this section of the country, is back in town planning to launch a half-million-dollar tire-making company. He states that he has subscriptions to stock to the amount of $150,000. Judge Richard Peck, of New York City and Atlanta, is interested in the proposed venture. Mr. Magowan states that he has been granted a patent on a stitch tire which he proposes to manufacture. Some time ago he organized the Braender Rubber and Tire Co., of Rutherford, New Jersey, a $90,000 concern, and placed an order with the John E. Thropp & Sons' Co. for tire equipment. The order was filled by the Thropps.

Mr. Magowan and the heads of the Thropp concern were to have had a conference March 25, but a fire in the Thropp plant on that day interfered. The fire destroyed the pattern shop. The exact amount of the damage has not been ascertained, an inventory now being taken; but many devices for making tire moulds, vulcanizers and other tire equipment were either destroyed or damaged.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS has hardly started out into springtime activity. Not much change is noted since last report. The boot and shoe trade—in rubber goods—has received a severe blow, when, after an almost snowless and nearly iceless winter, a warm and early spring has discouraged the jobbers and the retailers, all of whom are likely to carry over considerable stocks of rubber footwear. Thousands, probably millions, of New England and New York people have gone through the entire season without wearing rubbers for a single day, and, of course, they haven't bought any.

The druggists' sundry business, it is claimed, is likely to be a misnomer if things continue to develop, as at present, for the department stores now prove to be the largest buyers of these goods. To be sure, the two syndicated drug store concerns compete with each other in seeing which can cut prices the deeper, and this discourages retail druggists from stocking up. The result is large sales to the syndicated druggists and to the department stores, but as they are very close buyers, the result isn't so extremely satisfactory.

The mechanical lines still feel the effect of conservatism and the tendency of mill men to allow the manufacturers and jobbers to carry the lion's share of the stocks. Many purchasing agents are so reducing supplies of belting, etc., in their stock rooms that they have to shut down some of their machinery while waiting the filling of rush orders, this in some cases proving costly economy.

But whatever may be the report in other lines, the automobile tire business continues lively. Some of the factories are working overtime to increase their capacity to supply the urgent demand. A man well posted in the tire business estimates that there are 700,000 cars now in use, which will require 3,000,000 tires to run them through this season, and judging from last year and the year before, about 300,000 new machines will be sold this year which will require 1,200,000 tires to equip, and at least 400,000 more to renew those worn out or seriously damaged. Thus the whole country will need 4,500,000 tires during 1913, and to make these will require more rubber than in all the other rubber industries combined.

The reclaimers are feeling the effects of the lack of rubber-wearing weather mentioned above. As few people have worn rubbers, not many cast-off rubbers are found by the junk men, and prices of scrap rubber shoes are soaring. There is a sympathetic rise in the prices of scrap tires, etc., with the result that reclaimers are paying out large sums for desirable lots of second-hand material.

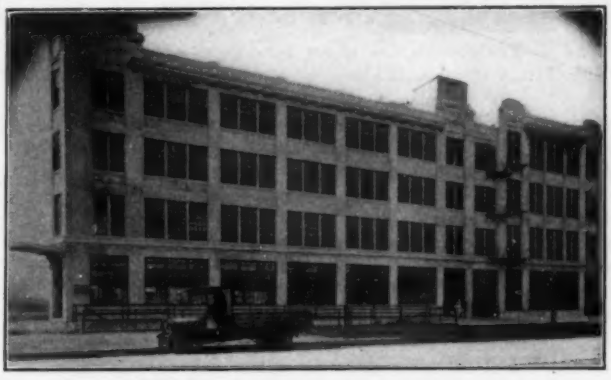
* * *

The automobile show last month was a gigantic success in many ways. The show itself made good, clearing a handsome profit above all expenses. The attendance was larger than ever, and at times the great building proved too small for the careful inspection of the exhibits, owing to the crowded condition of the aisles and enclosures. As a means of inducing business this has far surpassed any previous show, and with the aftermath of orders which will come later as a direct result of the exhibition, will certainly prove that Massachusetts stands near the top in the proportion of automobiles to the number of inhabitants. The tire men were unusually well represented, and seem perfectly satisfied with the results of their exhibits.

* * *

Among the exhibits at the Truck Show was a fine Packard motor-truck, specially designed for the Monatiquot Rubber Works, of South Braintree. This truck has since been added to the service department of that company for use between the factory and the Boston store on Atlantic avenue, and is intended for emergency shipments where rush delivery is required.

The new building of the United States Tire Co. briefly mentioned in this department in the March India Rubber World, is now fully completed and is occupied. Manager E. H. Kidder is very proud of the new headquarters which in location, thoroughness of detail, adaptability to the requirements of the business, and elegance of fittings are in perfect accord with the enterprise of the company. The building is neatly triangular in ground-plan, at the junction of Beacon street and Commonwealth avenue, at the very gateway of Boston's Automobile district. It is of reinforced concrete, four stories and basement, with large windows giving a flood of light on all sides. A large clock occupies a prominent position, which will be consulted daily by the thousands who pass along these two prominent streets every day in the year, while in the evening strikingly conspicuous electric signs flash out the name of the company.



United States Tire Co.'s New Boston Building.

The first floor is utilized as salesrooms, suitably and handsomely fitted. The second floor contains the business offices. Both these floors are carpeted with artistic rubber tiling, a product of the United States Rubber Co. The third and fourth floors are for stock, and here are carried, ready for immediate sale or shipment, a full assortment of all the different styles and sizes of tires, including pneumatic, motor-truck, motorcycle and bicycle tires made by the company. In the basement, which is reached by an inclined run-way, a complete motor truck department is installed, with everything in the way of machinery and tools to repair and equip trucks with the tires of this manufacture.

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Hon. L. D. Apsley, president of the Apsley Rubber Co., invariably plays a game of checkers on March 13 of each year, unless that day falls on Sunday. March 13 is the birthday of his venerable father, who was born ninety-five years ago. Mr. George Apsley, of Lock Haven, Pennsylvania, is a wonderful man, straight, active and vigorous. He opens his store in the morning, waits on customers, and closes up at night. When his son, of whom he is very proud, visits him on his birthday there is always a game of checkers on the program, and the older man is fully as often the winner as the younger. It is because L. Dewart Apsley has seen so many games played in little shoemakers' shops and country grocery stores that he decorates every case of Apsley rubbers with a checker board on one end, and distributes boxes of checkers to dealers.

* * *

George H. Hood, who is well known to our readers as a former rubber footwear manufacturer, but who sold out his business to the United States Rubber Co. some years ago, has not been in rugged health for the past year or two, while Mrs. Hood was also an invalid. Last January, they left their hand-

some residence in Hamilton, this state, to spend the winter in Florida. They went to Palm Beach in their own private car, accompanied by a physician and several trained nurses. On the 13th of last month news came from Palm Beach of the death of Mrs. Hood. The body was brought North, interment being in Chelsea on Sunday the 17th. Mrs. Hood was the mother of Frederick C. Hood, president of the Rubber Club of America, and general manager of the Hood Rubber Co., and also of Arthur N. Hood, treasurer of that company, and of Richard Hood, of Paris, European agent for the company.

* * *

The B. F. Goodrich Co. stores have good window displays. Their Boston store on Boylston street contains a very attractive exhibit. It is a model of the plant at Akron, Ohio. It is of wood, but so finished as to imitate the original, some buildings being of brick and others of concrete. The model shows in a ground space about six feet square ten or twelve of the factory buildings, each built to scale, and all electrically lighted, thus representing a night view of the plant. This model, which is an exact copy in miniature, is a center of attraction. A bird's-eye view alongside shows all these buildings, and also a large part of the plant not included in the model. Manager Limric is receiving many compliments on the attractiveness of the exhibit.

* * *

The Walpole Rubber Co.'s tire salesroom, at 757 Boylston street, has in its window another unique display of the tires made by the company. In the center, however, is a model which brings passers-by to a stop. It is a miniature automobile, perfect in its appointments, exact in its proportions, although only two feet long. It has left-hand drive, thoroughly upholstered seats, fore doors, full canopy top, clock, speedometer, etc. Instead of a six-cylinder engine, however, is a clock-work which enables the machine to propel itself "like life." The miniature tires, naturally, are labeled "Walpole." The remarkable thing about it is that the model was made by a prisoner in Charlestown State Prison, who has never seen an automobile except through the bars of his cell, but who has fashioned this model from pictures in advertisements.

* * *

Carpenters, painters and floor layers are busy at 863 Boylston street, where preparations are being made for its occupancy by the Republic Rubber Co., which expects to move into these larger and more convenient quarters about April 1.

* * *

The Patterson Rubber Co.'s plant at Lowell is well along toward completion. It was expected that it would be making tires by April 1, but there is a possibility of some slight delay beyond that date. The foundations for the heavy machinery are ready and the machines arriving, but it may be some days before they will be properly set and so adjusted that real production can begin. However, it is safe to say that before another issue of THE INDIA RUBBER WORLD is printed, the factory will be turning out goods.

* * *

W. F. Stevens, who was Charles A. Coe's right-hand man, when the latter was managing the American Rubber Co.'s agency in Pearl street, this city, is now a prosperous fruit farmer and automobile merchant in San Juan, Porto Rico. "Billy," as all his friends know him, is at present in this country. He and his brother started a fruit ranch in Porto Rico a few years ago, and while waiting for the trees to come into bearing worked up a fine pineapple business, and at the same time took the agency for two lines of automobiles and a line of trucks, so that he has enough to keep him busy, prosperous and happy.

* * *

The garment workers' strike in this section has interfered materially with some of the raincoat makers. Some of the concerns have accepted the terms of the strikers, while others in their attempts to run their factories with non-union help have found more or less difficulty in doing so. In Milford, Massachusetts, a near-riot occurred on March 3 in front of the Archer Rubber Company's factory, in which several non-union men were badly bruised, and two policemen were roughly handled. The trouble appears now to be settled satisfactorily.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

BUSINESS in the various lines of the rubber industry in Chicago continues fair, with reports from scrap rubber dealers that conditions are much better in their line than they were one month ago. It was the general belief that the Akron strike would play havoc with the scrap rubber interests, but Chicago dealers assert that the worst has passed and that they are now anticipating a fairly active spring. Business in scrap rubber had been good until the Akron strike began, and then there was a setback for about three weeks. However, this period of inactivity simply served to move slowly what little overstock there has been on hand.

Belting and packing lines are moderately active, though manufacturers note a tendency on the part of consumers to let the mill-supply houses and manufacturers carry the bulk of the stock, by buying in smaller quantities and only as needed.

The unusual weather that prevailed during March gave quite an impetus to the clothing market and many dealers who had a small stock on hand in anticipation of a late spring lost no time in sending in their orders. The result has been that jobbers have had their hands full getting orders out on time.

The demand for footwear throughout the month of March has been up to expectations, and this is due in a large degree to the favorable weather conditions. The prosperity that is being enjoyed at the present time is sadly needed, as business in footwear during the winter has been unusually poor. Some houses report that their sales of footwear during the winter were smaller in volume than in any winter for years, and this is ascribed to the comparatively mild weather. The blizzard that prevailed recently and the consequent slush had a tendency to assist the foot-wear market, and the appalling storm of a week ago created a wide demand for rubber shoes and especially for boots.

Mechanical rubber goods are reported stronger at the present time than they have been at any time since the beginning of the year. Throughout the winter the mechanical rubber interests have at all times expressed themselves as pleased with market conditions, but since the beginning of March their feeling of satisfaction has been more pronounced than heretofore. A feature of the trade has been the remarkable demand for belting, and this activity is attributed to the unexampled prosperity of Chicago's manufacturing concerns at present. Orders for belting have been coming in regularly, and for large lots, mechanical rubber goods houses report, and most of the demands are for immediate delivery.

The Cowell Rubber Co., which has recently put on the market the Keystone bath spray line, has made application for a state charter for incorporation. The capital of the concern will be $10,000.

"The market has been much easier in scrap boots and shoes during the last few weeks than it had been at any time since the Akron strike began," said H. Muehlstein. "A feature of the market is that prices have been steady and the trouble at Akron has little bearing on the Chicago market at the present time. Collections are much better than they have been in some time and offerings are being made more freely in boots and shoes. There is a good demand for all items of hose, excepting air brake, which shows little activity. The Chicago trade is pleased to note that the prospects are good for an early adjustment of difficulties at Akron, and is also glad to announce that the strike has not been affecting the local market near so much as most of us believed it would."

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

JAMES W. FRANKLIN, superintendent of the boot and shoe departments of the National India Rubber Co., at Bristol, has had a long term in the service of rubber concerns in his home town. While he is a young man in appearance, he has served in various capacities in the National India Rubber Co.'s factory and the Byfield Rubber Co.'s factory—now the plant of the Consumers' Rubber Co.—for 32 years.

Not only is Mr. Franklin well known in the rubber business, but he also has a wide acquaintance in political circles, having been at one time a member of the Rhode Island General Assembly. He has also held many offices in Bristol, including that of Town Councilman, and he feels a proper pride in the fact that he was never defeated in a political contest.

In former days when the National India Rubber Co.—now employing 1,300 hands—was known as the National Rubber Co. Mr. Franklin, as a boy, procured employment in the packing department at the modest wage of 75 cents a day. Since then he has worked upward step by step until he is now the directing superintendent over nearly 1,000 hands. Serving his apprenticeship in the rubber industry, sweeping the floors and putting things in order in the department in which he worked, he soon showed an aptitude for a more responsible position and before he attained his majority he was in charge of the packing department at night, continuing in this position for several years. When a vacancy existed he was appointed day foreman of the packing department, eventually being promoted to the position of assistant superintendent.

When the Byfield Rubber Co.—later merged with the Consumers' Rubber Co. of Bristol—was organized, Mr. Franklin became its superintendent, remaining there for about three years, or until 1898, when he was recalled to the factory of the National India Rubber Co. A native of Bristol, Mr. Franklin has had a wide experience in the rubber business and his knowledge of the vulcanizing of rubber is considered to be the best in Bristol. During his employment in the National India Rubber Co.'s factory he has seen the shipments of footwear increased from 14,000 pairs of shoes to 30,000 pairs of shoes a day.

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John T. Fales, for years connected with rubber factories in Newport, died of pneumonia at the Rhode Island Hospital, Providence, March 3. He was born in Pelham, Massachusetts, in 1842 and entered a mill at East Amherst at an early age. In 1893 he went to Newport as overseer of the Goodrich Manufacturing Co., and in 1896 was made superintendent of the Narragansett Web Co., remaining in that capacity until the company was moved to Providence in 1902. Of late years he was engaged in the insurance business in Providence.

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The annual shut-down of the Alice Mills and the Millville mills of the Woonsocket Rubber Co. for the taking of an inventory of stock and also for the making of needed repairs took place the latter part of March. The shut-down was for a shorter period than in the rubber mills in other places. At the Alice mill 1,400 hands were affected while at the Millville mill 600 were idle.

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Manager LeBaron C. Colt, of the National India Rubber Co. of Bristol, who has been in the West for a month, returned March 5. Mr. Colt went to Denver for a rest. He returned much improved in health.

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William D. Newbold, aged 56, died March 2 at his home in Bristol, after an illness of three days of bronchial pneumonia. He had lived in Bristol the greater part of his life. Mr. Newbold was formerly a rubber bootmaker in the factory of the National Rubber Co. and in the factory of the Boston Rubber Shoe Co., at Malden, Massachusetts. He retired from active work several years ago.

A new engine, boilers and other fittings are being installed at the International Rubber Co.'s plant at West Barrington. The company has many orders ahead and in order to keep up with the rush of business the plant is running night and day. The engine is larger than the one that it is replacing and, it is expected, will take care of the needs of the plant for some time to come.

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Albert C. Luther, a veteran of the Civil War and for years an an employee of the National India Rubber Co. of Bristol died March 13 at his home on Cottage street, Bristol, as a result of a fall on the street. He was 82 years old and was a native of Warren.

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The factory of the National India Rubber Co. of Bristol closed down March 29 for two weeks for the annual stocktaking. The mill will resume work April 15. It employs about 1,600 hands.

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Walter R. Reeves, foreman at the Washburn Wire Works, Phillipsdale, makers of rubber insulation, was painfully injured at the plant recently when his right hand was drawn between the rolls of a machine. Mr. Reeves was able to free himself from the machine just in time to prevent a more serious accident. As it was, the thumb and forefinger of the right hand were injured.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

BUSINESS activity is steadily maintained and little or no complaint is made by local rubber interests on trade conditions. Weather conditions in this section, however, are responsible for some decrease in activity in rubber footwear trade, but on the whole retail distribution has been measuring up to the average. Rubber clothing dealers report a good trade, as there seems to be a growing demand for rubber clothing.

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Rubber shoe manufacturers and jobbers are at sea over a bill introduced in the Ohio Legislature now in session, known as the "Pure Shoe Bill." While its provisions are particularly directed to leather footwear, yet local jobbers see a "sleeper" in the proposed law which would bring rubber footwear under its operation, and consequently jobbers have joined the local manufacturers in their campaign to defeat the measure. The bill has been introduced by Senator Potting of Akron, who comes from one of the principal rubber footwear manufacturing centers of the country. The bill, if it passes, will compel all manufacturers of footwear in the State to stamp the products turned out by them if substitute products have been used. It is claimed by Ohio manufacturers that if the proposed law is enacted it would practically eliminate the Ohio concerns from competing with outside manufacturers, as the former's cost of production would increase to a point where they could not compete with manufacturers in other states.

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The Ohio State Pharmaceutical Association has joined forces with manufacturers of druggists' sundries in an endeavor to bring about a revision of the postal laws, so that it is made clear what articles may and may not be sent through the mails by druggists. Resolutions have been drafted by a committee of the association and will be forwarded to the postmaster general.

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The shock shifter hub, invented by John Muir, of London, England, will shortly be given a try-out in this city. Mr. Muir has been in this city for several days, and has arranged with the Taxicab company to fit the device on one of its cars. An axle company has also decided to give it a test. Instead of pneumatic tires, solid rubber tires are used. The road shock, according to the inventor, is reduced to a minimum. Mr. Muir is here primarily to interest manufacturers of solid rubber tires in organ-

izing a company to make the hub in this city. The Kelly-Springfield and several other large manufacturers of solid tires have become interested. In this invention, steel balls being placed around the axles of motor vehicles so as to give them an all but liquid bearing, and by their centrifugal movement divert road shock therefrom and convert it into propulsive effort. As 45 per cent. of the present cost of maintenance is due to vibration, the importance of the Muir system is obvious. Its practical success is vouched for by some of the largest users of motor traction in Europe.

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While many of the big rubber factories throughout the country were facing strike troubles, the Cincinnati Rubber Co. was operating its plant in a peaceable manner, not the slightest signs of disturbance being observable at this plant among its employes, notwithstanding the fact that the local newspapers were publishing daily columns of strike news from Akron.

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The Revere Rubber Co., of Chelsea, Massachusetts, has inaugurated a local advertising compaign for the purpose of promoting the demand for "Red Plug Rubber Heels," one of the products of that concern. Local dealers report that there is a growing demand for rubber heels, especially since the public is becoming educated to their merits.

* * *

To the regret of his many friends in Cincinnati and vicinity, Robert Motte, manager of the local branch of the United States Tire Co. has been transferred to New Orleans, where he is to put in action his valuable services in establishing a new agency in the Louisiana metropolis. He is succeeded here by E. W. Bailey.

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The Ira J. Cooper Rubber Co., representing the Kelly-Racine Rubber Co. and the Motz Cushion Tire Co., and operating branch houses in Dayton, Springfield and Columbus, has installed a battery of service motor wagons that will be at the instant disposal of auto owners meeting unexpectedly with troubles while touring within ten miles of the different cities where branches are operated. Expert mechanics supplied with every requisite for immediate repair are in charge of these service wagons, and their services are available without charge.

Ira J. Cooper, head of the company, treated his friends in the rubber trade to a surprise March 12, by taking to himself as his wife, Miss Florence Johnson of this city, who had been secretary of the company since its organization several years ago. Immediately following the ceremony the bridal couple left for a honeymoon trip through the south.

The F. M. Ross Springwheel Co. of this city has filed articles of incorporation with a capital stock of $100,000. The company will manufacture a patented solid rubber tire for automobiles which has been invented by F. M. Ross, who will head the new company.

The Pennsylvania Rubber Co. has entered the local field with its "Oilproof Vacuum Cup Tires." This company is represented here by G. M. Toe Water & Co., dealers in auto supplies, who have recently moved to 917 Race street, where spacious quarters have been opened.

The Lee Tire and Rubber Co., of Pennsylvania, is about to become a competitor in the local field for the tire and rubber auto accessories business. The company will open a branch house at the corner of Seventh and Main streets as soon as extensive repairs have been made.

Messrs. Hanke and Rothe, who are the local representatives of the Ajax-Grieb Rubber Co., of Trenton, N. J., have moved into new and more commodious quarters. The new home of the Ajax tires in this city is now located at Ninth and Race streets.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

ONE of the representatives of a local rubber establishment, dealing in rubber tires extensively, advances the opinion that the Government should step in and abolish the guaranteeing of rubber tires, hose, etc.—but particularly on automobile tires. This should be done, he suggests, not on account of the relief which it would give the rubber dealers, but because it would prevent much fraud and imposition, and would benefit the morals of the whole community. People buy guaranteed tires—say guaranteed for 1,000 miles. After they have run 4,000 miles the tire is in a bad shape. Then they remember the guarantee, are tempted and fall. The best men of the town, lawyers, doctors, prosperous business men all fall before the temptation. They bring their tires back in the hope of getting a new one, and having started they must carry the thing through, and under the shrewd cross-examination of the adjustor they tell many more and blacker lies than they started out to tell. No one but the tire man knows to what extremes the automobile owner will go. The automobile owner is buying his machine on time, and has put every cent he can borrow into his first payment. From then on he commences to beat the oil man, the gasoline man and the tire man, but he falls most desperately upon the tire man because the tire man is foolish enough to give him a guarantee. Competition compels the tire men to make the guarantee, and there seems no present chance of their abolishing it.

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The new factory of the Goodyear Rubber Co., of San Francisco, has been fully completed and is now in full swing. This is one of the finest rubber factories in the west.

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Mr. E. W. Balding, general sales agent for the New York Belting & Packing Co., is now visiting on this coast.

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A. L. Comstock, the superintendent of the American Rubber Co., of Boston, has been in San Francisco for a few weeks, and from here he will go to Honolulu for a pleasure trip.

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W. J. Gorham, president of the Gorham-Revere Rubber Co., sailed recently on the steamer "Korea" for the Orient, where he will visit the principal market cities in the interests of the company. He will be gone three or four months and will go all through the Orient. This is the first time Mr. Gorham has been across the water for years, although formerly he used to visit China and Japan, and knows the countries well.

Mr. Valberry, who formerly had the agency for the Faultless Rubber Co.'s line on the coast, has given up that agency and has gone in with the B. F. Goodrich Co.'s local branch.

B. H. Pratt, Pacific Coast manager of the Fisk Rubber Co., is in the southern part of the state, where he is visiting the branch stores at Los Angeles and the San Diego agency.

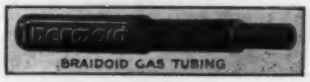
H. W. DuPuy, president of the Pennsylvania Rubber Co., who is now in Seattle, Washington, has been visiting all of the Pacific Coast distributing agencies accompanied by his coast representative, Mr. J. E. French, of San Francisco. They have already visited all of the principal cities of California, including Los Angeles and San Francisco, and Mr. DuPuy is more than pleased with conditions on this coast. He was surprised at the growth of San Francisco, this being his first visit here since immediately following the 1906 fire.

The Chanselor & Lyon Co., agents for the Lee tires, called a conference of the heads of departments which met recently to plan for a state wide campaign now that the touring season is about to open. There were present F. H. Lyon, of the Los Angeles branch; W. A. Avery, of Seattle, Washington; W. H. Whipple, of Fresno; Geo. E. Johnson, of Portland, Oregon; Henry D. McCoy and William Reed, of San Francisco.

New Rubber Goods in the Market.

THE BRAIDOID GAS TUBING.

THE Thermoid Rubber Co. has been very successful with its Braidoid Gas Tubing, which is a tube designed especially for automobiles, and is made with great care in all its details. The tube is made of selected stock so that it will stand the action of all gases, and the covering is closely braided — not wrapped — and is constructed of a particularly strong and light thread. The outside rubber cover is of the same composition as the inside tube. It is believed that this is an ideal tube for gas lamp and gas tank connections. No nipples or rolled ends are necessary in attaching it for service. [Thermoid Rubber Co., Trenton, New Jersey.]



RUBBER SHOES FOR DIVERS.

If anybody has the impression that the diver is not an important person, he will immediately change his opinion on looking over the 72 large pages of the catalogue entitled, "Diving Apparatus," issued by Andrew J. Morse & Son, of Boston, for these entire 72 pages are devoted to the diver and his divers wants. There are, moreover, fully a hundred illustrations showing the many different articles that are necessary for his work — or at least for his safety and comfort. Among articles of the latter class may be included the divers' shoes. The catalogue shows quite a variety; two kinds are illustrated here. One illustration shows a pair of very heavy rubber shoes to which are strapped iron soles running well up over the toe. These iron soles add weight to the diver's feet and operate to keep him in the desirable perpendicular position. The rest of the shoe is made of rubber, not so much, probably, with the expectation of excluding every drop of water, but because of the fact that rubber will stand innumerable immersions without deteriorating or stiffening. These shoes go over the foot of the water-proofed suit that encloses the diver's whole body.

There is no reason to expect that these shoes will become generally popular on the dry promenades of the upper world, but their utility in the subaqueous walks of life is obvious.

The smaller illustration shows a pair of lighter shoes made simply of canvas and rubber. These are called "Chaffing" shoes and serve to protect the feet of the diving shoes.—Andrew J. Morse & Son, Boston, Massachusetts.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

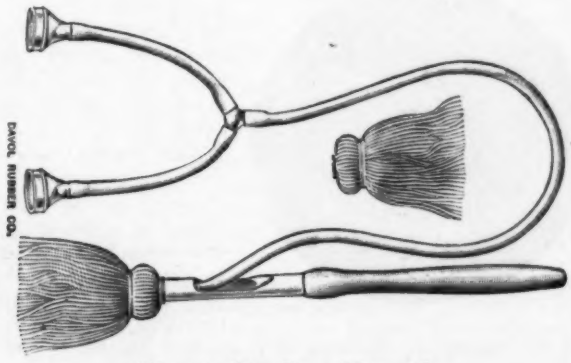
A THICK TREAD INNER TUBE.

Of new inner tubes there is no end, but here is one that is certainly interesting. It is made on the principle of the most wear where the most wear comes. In other words, instead of being of the same thickness in all parts, it is very much thicker on the tread than it is on the sides or at the base. The tread is nearly an inch in thickness, while at the base it is about a quarter of an inch in thickness. The cut shows the exact proportions of the tube. It is molded in just the shape shown. The advantages of this tube as claimed by its manufacturers—which claims would logically seem to be substantiated by the shape of the tube—are that it eliminates pinching, greatly lessens the liability to punctures and blow-outs, and requires less air pressure.

While this tube has but recently come on the market, the manufacturers have given it a very thorough testing during the last two years. [The Kokomo Rubber Co., Kokomo, Indiana.]

WASHING DISHES WITH DRY HANDS.

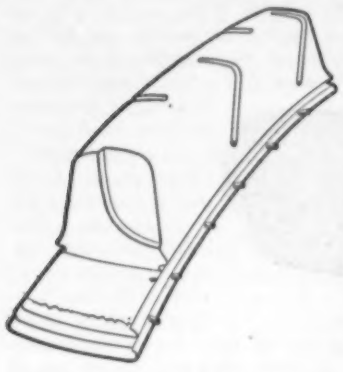
The great perpetual desideratum of the housekeeper is to know how to do kitchen work and keep parlor hands. Plenty of women are perfectly willing to do housework, but they do not want to have hands that show it. Here is a little invention that will help women in this predicament, as it will enable them to wash all the dishes without even wetting their hands. It consists, as the cut shows, of a rubber tube with a forked end, the two ends of the fork having suction cups that go over the hot water and cold water faucets of the kitchen sink. At the other end of the rubber pipe there is a dish mop. The dishes are put in the sink or in a wire tray, the water is turned on at just the temperature desired, and in whatever volume is needed. Then the housekeeper takes hold of the dry handle and mops her dishes. It is obviously a clean and sanitary process, as the dishes are washed with running water. It is simple to operate, as all that is necessary is to detach the mop after each washing, and hang it up to dry, while the pipe can be left over the faucets or taken off—as the housekeeper may prefer. [The Davol Rubber Co., Providence, Rhode Island.]



"YANKEE GIRL DISH WASHER."

THE ST. LOUIS CO.'S NOTCH ELECTRIC TIRE.

About three years ago Mr. J. A. Swinehart, who had been for some time connected with a tire manufacturing concern, retired from the business. But once a tire man, evidently always a tire man; and Mr. Swinehart was not able to keep his mind from the great tire problem. As a result he has evolved a tire which he has called the Notch Electric Tire, and which is being manufactured by the St. Louis Tire & Rubber Co., of St. Louis, of which Mr. Swinehart is vice-president and manager. The accompanying cut gives something of an idea of this "Notch" tire. These notches are inserted alternately at regular intervals on a slant of about 20 degrees. They serve to give the solid tire more spring and resiliency, and according to Mr. Swinehart, they serve another very important purpose. Where the car is running on a smooth but muddy road-bed, these notches serve to push the mud or moisture to one side so that the smooth tire has a clean smooth surface to operate on, and thus avoid skidding. Moreover, these notches serve an excellent turn in city streets, as they make it easy for a car to get out of a street car track when it is wet.



Mr. Swinehart's new company not only makes this notch cushion tire, but is manufacturing truck tires of the flange type, and also a pneumatic tire on a new principle, which provides for the expanding of the carcass within the mold by hydraulic power, so as to insure against buckling or pinching of the fabric.

RUBBER SEAL FOR BOTTLED LIQUIDS.

Bottled liquids have come into such general use for domestic as well as outdoor purposes, that to keep them secure, and at the same time free from exposure to air, has become a matter of daily necessity. These ends have been accomplished by the "Brownie Cap," an absolutely sanitary rubber seal for bottles, which is quickly cleansed and sterilized in hot water. The rubber is always pliable and effectually protects the liquids from germs, dust, vapors and foul air or odors.

While this cap thus affords full protection for liquids, it can be easily slipped on or off, and is thus specially adaptable for use on picnics, excursions and camping trips. It is also most valuable for the purpose of sterilizing milk intended for babies and, owing to its airtight clinching under the collar, permits the bottle to be placed in any position on the ice, without risk of leaking or spilling.

A REMEDY FOR CHAFING.

Insulated wire and rubber gas tubing are liable to become chafed by passing through holes in sheet metal. This can be prevented by short pieces of heavy rubber and fabric tubing slipped over the former, and held in place by a little rubber cement.

A LITTLE RUBBER TUB FOR BABY.

How to bathe that member of the family usually flippantly referred to as the "kid," has always been something of a conundrum. Obviously it would not do to fill a bath-tub full

The Baby's Bath Tub.

of water as the child might go under, and to bathe him in a few inches of water in the bottom of the tub is a back-breaking process for the mother or nurse. But here is a bath-tub designed especially to meet the situation. It is a flexible rubber tub, just the baby's size, on a rigid steel frame that fits on the side of any bath tub. This tub within a tub can be filled from the faucet and emptied into the tub, which obviates all carrying of water. The child gets all the depth of water necessary, and can tumble around in the tub without being injured in any way, while the nurse can stand or sit during the bathing operation in a comfortable position. [The Heaton Manufacturing Co., First National Bldg., Chicago, Illinois.]

PERFECTION NON-SKID CLIMBER.

The adaptation of motor vehicles to commercial uses has resulted in the presentation of various difficulties, prominent among which is that of skidding. While this problem is a troublesome one under all circumstances, it becomes doubly so in the case of motor-trucks where the weight of the load is naturally heavy.

With a view to remedying these troubles the "Perfection Non-Skid Climber" has been introduced, in which the shoes or treads are made from fine drop-forged steel, treated with heat, connected to Swedish iron side chains by steel side-links. The shape of the shoes prevents them from injuring the tire. Tires can be worn down to the rim without altering the shape. The cross-shoes having two flexible joints, there cannot be any permanent distortion of any of the parts, the tread freely adopting itself to the surface of the road. There are no chains over the tire to collect sand and gravel to cut into or wear it. The device is marked by simplicity of construction. Ease of adjustment and infallible action are also claimed for it. It has but three working parts, can be easily and quickly put on and taken off; operating on a simple mechanical principle which automatically checks all sliding, skipping and skidding. [Perfection Non-Skid Climber Co., Edon, Ohio.]

News of the American Rubber Trade.

THE ACUSHNET PROCESS.

THE Acushnet Process Co. report many inquiries in regard to their "New Tabasco" and "Hidalgo" brand rubbers. The good appearance of these rubbers has been generally commented upon. They also report a good demand for uncured friction scrap, and state that this part of the plant is now working on a day and night basis. A new reclaiming process is being developed by them, from which they claim that they are getting excellent results. The reclaimed products will probably be put on the market during the summer.

RUBBER GOODS MANUFACTURING CO.

The annual meeting of stockholders of the Rubber Goods Manufacturing Co. for the election of directors and for the transaction of any other business which may properly be brought before the meeting, will be held at the principal office of the company, No. 15 Exchange place, Jersey City, New Jersey, on Thursday, April 10, 1913, at 12 o'clock noon.

The transfer books will be closed, but the New Jersey Corporation law will not allow to be voted at said meeting any share of stock which shall have been transferred after March 21, 1913.

STATEMENT OF THE APSLEY RUBBER CO.

The Apsley Rubber Co., Hudson, Mass., has filed with the Massachusetts secretary of state a statement of its financial condition, dated January 20, 1913, which shows an increase of $30,000 in surplus over a year ago. Its latest statement in comparison with that made a year ago is given below:

Assets:	1913	1912
Real estate	$252,359	$252,133
Machinery, fixtures, tools	239,932	233,866
Material stock in process	511,365	508,334
Cash and debts receivable	444,797	414,173
Patent rights trade marks	8,851	8,882
Investments	120,000	120,000
Total	$1,577,304	$1,537,388
Liabilities:		
Capital stock	$750,000	$750,000
Accounts payable	197,203	117,095
Floating debt	265,000	335,000
Surplus	365,101	335,292
Total	$1,577,304	$1,537,388

A BOSTON VIEW OF U. S. COMMON STOCK.

There are few topics as interesting to financial writers as the potentialities in the way of dividends of the common stock of the United States Rubber Co. Here is a paragraph taken from a recent issue of a Boston financial paper, which shows how at least one New England observer views the situation:

"There continues to be a strong impression in quarters close to the controlling interests of the United States Rubber Co. that at their approaching meeting the Rubber directors will place their common stock on a 6 per cent. basis. Anthony N. Brady and Samuel P. Colt, I am told, retain their very large holdings, estimated by well-informed people a few weeks ago at 75,000 shares of this issue. They are the dominant interests in the company and are credited with the belief that the earnings of the Rubber company, present and prospective, amply justify the talked-of change in dividend. The open winter was against the rubber shoe business. On the other hand, the automobile industry is extremely active. The auto truck is gaining in usage by leaps and bounds. Hence a big field for the rubber tire business."

THE DUNLOP RUBBER CO. TO MAKE FABRICORD TIRES.

The "Fabricord" tire, owned by the Century Rubber Co., of Plainfield, N. J., has spread over new territory. A tire deal of considerable importance was recently completed, when the Dunlop Tire and Rubber Co. concluded an agreement with the Century Rubber Co. for the exclusive use and manufacture of the Fabricord tires in Canada. The agreement gives the Dunlop company the exclusive right to the Dominion and the goods produced in Canada will be known as the Dunlop-Century Fabricord Tire.

CAPITAL INCREASE AND OPERATIVES BACK AT WORK.

The Plymouth Rubber Co., of Canton, Ohio, has been incorporated under the laws of Massachusetts, with a capitalization of $1,500,000, consisting of 5,000 shares of 7 per cent. cumulative preferred and 10,000 shares of common at $100. The incorporators are A. Sydeman, J. Meade, D. Harris, S. Lewnberg and W. H. Howard.

Incidentally, the employees of the company who went on strike late in February returned to work on March 10, on the terms offered them by the company.

A BOSTON BRANCH FOR THE D. FEINBURG CO.

The D. Feinburg Co., 243 Water street, New York, opened on March 15, a branch store and warehouse, with full facilities for handling scrap rubber, at 168 A street, Boston. It will be in charge of M. G. Hopkins and Fred. Feinburg.

PORTAGE RUBBER CO.'S DIVIDENDS.

The board of directors of the Portage Rubber Co. at a regular meeting held on Wednesday, March 12, declared the regular quarterly dividend of one and three-quarters per cent. payable April 1 on all stock of record March 1. This company has been paying a dividend of 7 per cent. on its preferred stock since 1910. It is reported that they have already booked orders for practically all the tires they can make during the coming season, and it is believed by people familiar with the company's affairs that it can soon pay a dividend on the common stock also.

TRADE NOTES.

The Century Rubber Co., of Chicago, has acquired a five years' right to manufacture Goodall packings. This is a relatively young concern, which has made rapid strides. It makes a general line of mechanical goods, as well as an excellent quality of reclaimed rubber.

Robert Badenhop, importer of crude rubber, balata and guttapercha, has recently moved into his new offices at 69 Wall street, New York. The change from the old quarters was occasioned by the increase of business. The firm has recently opened a branch office in the Second National Bank building, of Akron, with Mr. Harold W. Holcombe in charge. Prior to Mr. Holcombe's present affiliation, he was connected with the Trenton Rubber Co.

The Dryden Rubber Co., of Chicago, is now operating its new plant, which is as well-equipped and as busy a factory, for its size, as there is in the West. The Dryden Co., in addition to a general product, is making a line of highly successful specialties, including a rubber belt boot for horses, and a special type of plumbers' force-cup, both of which are in active request. George Dryden, the president of the company, whose methods have brought the Dryden business to its present successful condition, is one of the most aggressive and effective members of the Western rubber manufacturing trade.

The McIlroy Hose & Belting Co., of Hammond, Indiana, has put a new rubberized fibre hose on the market, said by Mr. McIlroy to be the only hose of its type now being offered.

OBITUARY RECORD.

DANIEL S. PRATT.

DANIEL S. PRATT, president of the Foster Rubber Co., of Boston, died at his residence in Brookline on March 15 after a short illness. He was well known in the rubber trade, having been connected with the Elastic Tip Co., a business founded by his father. He was the organizer of the Foster Rubber Co. He was a member of the Rubber Club of America, and had many friends in the trade. He is survived by his father and his brother-in-law, Mr. Stetson, both of whom are interested in the Foster Rubber Co.

FRANK E. HALL.

Frank E. Hall, widely known among tire men as the inventor of a sectional automobile tire, died at his home in Wollaston, Mass., March 14, after a lingering illness. He was sixty years of age, and had spent the greater part of his business life in rubber manufacturing. He devoted a great deal of time to experimenting, and six years ago was granted a patent for a sectional automobile tire. He is survived by two sons, both in the rubber business—Harry, connected with a rubber house in Portland, Oregon, and Stanley, connected with the Kelly-Springfield Co.

RHODEY P. WHALEN.

To be connected with a manufacturing company continuously for forty-five years is as creditable as it is unusual in these days. But Rhodey Patrick Whalen, who died March 19, in Tuckahoe, New York, had been in the employ of the Hodgman Rubber Co. —whose factory is located in that town—for forty-five years.

He was born in Ireland in 1852—his father coming to this country a year later and settling in Tuckahoe. The boy attended the public school, and at the age of sixteen, entered the service of the Hodgman company as a driver of one of its factory wagons. A little later he was transferred to the calender room, where his efficiency soon placed him in the position of foreman. Later he was made foreman of the compounding room, a position which he filled faithfully and satisfactorily for many years. Mr. Whalen did not confine his energies altogether to his factory work, but was active in the affairs of the village, serving at one time as a member of the Board of Education, in his district and later as receiver of taxes for the village. He was also one of the organizers of the "Holy Name" and temperance societies of the Church of the Immaculate Conception, of which he was a member.

C. E. W. WOODWARD, PH.D.

Dr. C. E. W. Woodward, of the Fisk Rubber Co., died suddenly of heart disease on March 24, in Chicopee Falls, Massachusetts. Dr. Woodward was one of the organizers of the Fisk Rubber Co., which he formed in conjunction with H. G. Fisk and H. T. Dunn in 1898, acting for the first few years as the company's superintendent. Prior to that time he had been connected with the Overman Wheel Co., Dr. Woodward was sixty-one years of age. The funeral occurred in Chicopee Falls on March 26, and the burial took place the following day in Cambridge, Massachusetts.

THE AKRON STRIKE.

An article in this issue which will prove of special interest to many of our readers is the letter from our resident Akron correspondent, giving a general survey of the strike that began among the rubber workers of that city on February 12, and was finally abandoned by its organizers on March 31—a strike without any adequate excuse, as foolish as it has proved futile, the chief result of which has been to inflict great damage upon the city of Akron, and especially upon the rubber workers of that centre, and lasting injury upon the cause of organized labor.

ENGLISHMEN WANT COTTON DUCKS.

A business man in England informs an American consular officer that there is an increasing demand for cotton ducks and sailcloth, which are used extensively in the rubber trade for sheeting, belting, hose, automobile tires, etc. The number of the Consular Report is 10,528.

PERSONAL MENTION.

H. W. DuPuy, president of the Pennsylvania Rubber Co., is making a tour of the Pacific Coast and incidentally visiting the branches and jobbing connections which have been established by his company.

Mr. R. P. Dowse has been appointed general sales representative in the Central district, with headquarters in Detroit, for the Goodyear Tire & Rubber Co.

Mr. B. W. McCabe, who was formerly with the Swinehart Tire & Rubber Co., of Akron, now covers the New York district for the Lee Tire & Rubber Co.

Mr. Max Loewenthal, of the United States Rubber Reclaiming Co., has recently returned from an eighteen months' tour of Europe. Mr. and Mrs. R. A. Loewenthal left on the *Caronia*, during the latter part of March for a Mediterranean trip.

MR. GEORGE J. BATES GOES TO THE FIRESTONE CO.

Mr. George J. Bates, who was formerly a department manager with the Diamond Rubber Co., has recently connected himself with the Firestone Tire and Rubber Co., Akron, Ohio, and will have charge of the sales department for pneumatic tires.

COMMODORE BENEDICT TO BE THE FIRST.

The society columns of a recent issue of the New York "American" contained the following interesting paragraph about Commodore Benedict, who is not only one of the directors of the United States Rubber Co., but who has made several trips up the Amazon in his private yacht, in connection with rubber planting and other enterprises in that country: "E. C. Benedict, mariner of many voyages upon the Spanish Main, is to be the first private yacht owner to steer a vessel through the turgid waters of the Panama Canal. Nothing delays Mr. Benedict's achievement except the fact that there isn't any water in the canal. But the yacht guests are all invited and the trip is a sure thing. Benedict bought John Hays Hammond's yacht, the *Atreus*, not long ago, and it's the *Atreus* that is going to show society the easiest way from coast to coast."

MR. STONE GOES TO THE PLYMOUTH COMPANY.

J. Everett Stone, assistant treasurer of the Hood Rubber Co., who has been with that company for the past fourteen years, severs his connection on April 1, to become treasurer and a director of the Plymouth Rubber Co.

THE UNITED STATES RUBBER CO. ELECTS A NEW DIRECTOR.

Raymond B. Price, president of the Rubber Regenerating Co., which was recently acquired by the United States Rubber Co., has been elected a director of the latter corporation.

THE STEIN RUBBER PLANT SOLD TO THE MOHAWK CO.

The Mohawk Rubber Co., recently organized in Akron, with a capital of $350,000—$100,000 in 7 per cent. cumulative preferred stock, and $250,000 in common stock, has bought the plant of the Stein Double Cushion Tire Co. The plant with its present facilities has a capacity of about 100 tires a day.

THE FIRE HORSE SOON ONLY A MEMORY.

One of the most spectacular sights imaginable, and one which never fails to arouse even the jaded sensibilities of the city dweller, is the engine on its way to a fire, drawn by two superb horses going at a mad gallop. But the spectacular has to give way to the efficient, and one large city after another is abandoning the horse-drawn fire engine in favor of the motor vehicle. The Fire Commissioner of New York announced early in March that no more horses would be added to the fire department, but that they gradually would be superseded. The New York department now has 100 motor vehicles and by the end of the year will have 200.

The apparatus now in the department numbers 850 vehicles, and it will take about five years and cost $2,500,000 to convert them all from horse-drawn to motor vehicles. New York fire horses die at about the rate of sixty a year, and as many more are laid off for old age or inefficiency.

A PAD MEMORANDUM CALENDAR.

J. W. Coulston & Co., 80 Maiden Lane, New York, importers of zinc oxide, lithophone, barytes and other ingredients used in the rubber trade, have supplied their customers with a small desk memorandum pad about 4 by 8 inches in size, in which each page has space for memoranda for a week. This pad is interleaved with pages printed in red, describing the various articles made and imported by this firm.

THE RUBBER STRIKE AFFECTS THE COTTON MILLS.

The interdependence of various industries has been strikingly demonstrated during the last few weeks by the serious effect that the Akron rubber strike has had on some of the New England cotton mills that supply the tire manufacturers with their fabrics. As the tire mills have been compelled to run on partial time, the fabric mills have been compelled to do the same; and the papers published in the localities where the cotton mills are situated have published the Akron strike news in detail.

AMERICAN TIRES ON THE SAHARA.

A set of 5-inch tires made by the Lee Tire & Rubber Co., of Conshohocken, Pa., is in service on the Sahara Desert. It would seem as if the wide pneumatic tire would go quite a distance towards solving desert transportation—like the wide feet of the camel.

ALLEGED INFRINGEMENT OF BATAVIA RUBBER CO. PATENTS.

The Batavia Rubber Co. of Batavia, N. Y., has served the following notification upon five tire manufacturing companies:

"You are hereby notified that you are infringing upon the rights of the Batavia Rubber Co. in the making of a non-skid tire, which is so close an imitation of the 'Security' non-skid tire, which has been made by the Batavia Rubber Co. for many years, as to deceive purchasers seeking Batavia tires, and you will be held responsible by suits at law for any damages.

"We will wait a reasonable time for your notification that you will cease further infringement."

THE H. W. JOHNS-MANVILLE CO. BUYS THE PULLMAN FARM.

The H. W. Johns-Manville Co., large manufacturers of a great variety of asbestos articles, have recently purchased the old Pullman property at Riverdale, Indiana, situated not far from Chicago. The purchase consists of 125 acres of land. The company is not yet ready to announce its plans for the improvement of this property, but it is rumored that it will build a factory, costing several million dollars, and giving employment to five or six thousand people.

AUTOMOBILES AT THE PANAMA-PACIFIC EXPOSITION.

Automobiles, motorcycles and accessories will be housed at the 1915 Panama-Pacific Exposition in a one-story structure, 600 feet long and 350 feet wide. This will be the first occasion on which a separate building of that magnitude has been devoted to the representation of the industries named, at an international exposition.

THE EASTERN RUBBER CO., LTD., OF TORONTO.

A new company has just been formed in Toronto, Canada, called The Eastern Rubber Co., Limited, with an authorized capital of $1,000,000, consisting of $400,000 cumulative preferred stock of a par value of $100, and $600,000 common stock with a par value of $50 a share. The company has been organized to manufacture all kinds of rubber goods, including auto, bicycle, truck and carriage tires, belting, hose, packing, and rubber heels. It took out its charter first under the name of the Dominion Rubber Co., Ltd. Subsequently it discovered that there was a company by this name in the Province of Quebec. Consequently it changed its name to the Eastern Rubber Co., Ltd. Its principal officers are: Roger Miller, president; W. L. Horton, vice-president, and A. G. Gamble, director and secretary-treasurer.

THE ALLIANCE RUBBER CO.

INCORPORATION papers were submitted early in March to the Secretary of State, in Ohio, of the Alliance Rubber Co., which is to manufacture rubber goods in the town of Alliance in that state. The company intended originally to take the name National Rubber Co., but as that name is already in use by more than one concern, the name Alliance was adopted in place of National. The company intends to manufacture a general line of rubber goods, including inner tubes, druggists' sundries, surgical goods, gloves and toys.

The incorporators are: George C. Russell, Milton Bejach, W. H. Purcell, M. S. Melbourne, F. E. Dussel, Robert Auld and H. F. Bohecker.

The company is capitalized at $100,000. A site containing three acres along the Pittsburgh Railroad has been acquired, which affords good facilities for manufacturing purposes.

A factory building 50 feet by 150 feet, two stories high, will be built on the location. According to those interested, the plant will be in operation by June, if nothing unforeseen occurs.

TO MARKET COUPLINGS FOR HIGH PRESSURE WORK.

The Star Supply Co., Inc., has recently been organized by a number of the salesmen of the Republic Rubber Co., with a view to marketing a special coupling for high pressure work in connection with steam and air drills. The company has its quarters at 229 West Fifty-eighth street, New York, and expects to have this special coupling on the market some time during the present month.

A NEW RUBBER COMPANY IN EAST LIVERPOOL, OHIO.

The Morgan & Marshall Co-Operative Tire and Rubber Co., with $500,000 capitalization, with R. J. Marshall, I. M. P. Marshall and Morgan Howell as incorporators, expects soon to begin the construction of a factory at East Liverpool, for the manufacture of rubber tires, tubes and sundries.

The Department of the Interior, Bureau of Mines, has recently issued a twelve-page pamphlet on the preparation of specifications for petroleum products, by I. C. Allen. It is known as "Technical Paper 36." Copies will be sent free to anyone sending in a request, but not more than one copy will be given to one person. Address, Director of Bureau of Mines, Washington, D. C.

A NEW CRUDE RUBBER FIRM.

James T. Johnstone, formerly agent in New York City for the crude rubber house of L. Sutro & Co., of London, has formed a partnership with Frank Whitworth, under the name of Johnstone, Whitworth & Co., at 130 Pearl street, New York, to act as agents in the crude rubber business for L. Sutro & Co., London, and also to act as agents for H. Diedrichsen & Co., of China, for the sale of products from the Far East.

THE AKRON TIRE AND RUBBER CO., OF BOSTON.

The Akron Tire and Rubber Co., of Boston, has been incorporated under the laws of Massachusetts with a paid-in capital of $15,000 for the purpose of handling automobile tires and rubber goods of all kinds, making a specialty of manufacturers' "second" tires. The treasurer of the company is Mr. M. Laserson, who has been connected with the rubber trade for a number of years.

AN ITALIAN FIRM WANTS AMERICAN RUBBER HEELS.

A firm of general representatives in Italy of English exporters and dealers informs an American consulate that it desires to represent American exporters of patent-leather and fancy shoes for men and women, shoes for workingmen, hunting boots, and rubber heels. This firm sends its traveling salesmen over the entire country. Correspondence may be conducted in English. The number of the Consular Report is 10,628.

THE ELECTRIC RUBBER RECLAIMING CO.'S NEW PROCESS.

IN the attractive and interesting booklet lately issued by the recently incorporated Electric Rubber Reclaiming Co., of Akron and Barberton, Ohio, detailed reasons are given for the claim of that corporation, that its electrically reclaimed rubber is superior to the best grade of the article hitherto offered.

While the moisture, specific gravity, ash, tensile strength, stretch and recovery, vary with the stock from which reclaimed rubber is made, such variations can, by the company's process, be controlled within the limits of any given specification adapted for the article. Such limitation is only possible where the reclaiming is in the hands of experts and experienced reclaimers, and where the production is under laboratory control. These conditions existing with the Electric Rubber Reclaiming Co., they claim uniformity of product. The most important quality claimed for the latter is, however, its long life, due to its freedom from undecomposed fabric, sulphur and pieces of metal. By the use of the electric current on which the process depends, these objectionable features are completely removed.

Sample shipments of scrap rubber are invited by the company for treatment by their electric process, and subsequent analysis. The officers of the company are: Emil Gammeter, president; Francis A. Brodbeck, Jr., vice-president; H. A. Backderf, secretary, and Fred W. Albrecht, treasurer. The directors are the above, with William A. Byrider, Joseph Dangel, Shreve Clark, Frank R. Moore, Chas. Fosnight, E. E. Crooks and George W. Blackburn.

It is anticipated that this new company will add to the great reputation Akron already holds in the rubber world.

PLANT OF THE ELECTRIC RUBBER RECLAIMING CO., BARBERTON, OHIO.

PAYING CLUB DUES WITH OLD TIRES.

The Massachusetts Auto Club, of Boston, has discovered a way of making it easy for its members to pay their dues. The house committee has sent out the following announcement to the members of the club: "Members wishing to dispose of worn-out tires and inner tubes may send them to the club, express prepaid and plainly marked with the owner's name. The tires will be shipped to a rubber manufacturer, and members will receive a credit on their bills for the number of pounds of waste rubber at the net price received from the manufacturer."

TO MAKE TIRES ON THE PACIFIC COAST.

Some of the business men living on the Pacific Coast have been asking themselves why tires could not be made there as well as anywhere. They have satisfied themselves in their own minds that they can, and they have formed the Panama Rubber Co., incorporated under the laws of California. The capital stock of the company is $500,000 preferred and $500,000 common. The officers are: W. D. Newerf, president; W. E. McCune, vice-president; J. S. Benner, secretary, and John F. Roe, treasurer. They have not yet decided where the factory is to be located, but are waiting for the best bid. It is likely, however, to be either in the suburbs of San Francisco or of Los Angeles. The company has prepared and issued a very pretty little book by way of a prospectus. It offers its 7 per cent cumulative preferred stock, in $10 shares, at par, giving a bonus of one share of common stock with every four shares of preferred stock purchased.

THE PERUVIAN-CHAMAYRO RUBBER CORPORATION.

A company has recently been formed, under the name of the Peruvian-Chamayro Corporation, with offices at 60 Wall street, New York, to engage in the exploiting of rubber lands in Peru. The company's prospectus states that: "The Peruvian-Chamayro Rubber Corporation absolutely controls 62,500 acres of the choicest rubber lands in the Province of Huanuco, Peru, which is in the heart of the great Montana rubber producing region. These lands lie between the Mayro and Palcazu Rivers and sworn statements by practical rubber men make the assertion that there are at least 250,000 full grown rubber trees on the property." The officers of the corporation are: President, O. P. Sperber; vice-president, Tonko L. Milic; secretary, George R. Allison; treasurer, A. C. Jenkins, of F. W. Mead & Co., New York. The board of directors is composed of the following: O. P. Sperber, Tonko L. Milic, George R. Allison, A. C. Jenkins, Dushan Trbuhovich, and F. D. Buck, of the Delaware Charter, Guarantee and Trust Company, of Wilmington. The company is incorporated under the laws of Delaware for $700,000, par value of the shares being $5. $200,000 is in 7 per cent. preferred stock, $500,000 in common stock.

TRADE NEWS NOTES.

Dr. S. W. Stratton, Director of the Bureau of Standards, Washington, has been elected to membership in the Council of Underwriters' Laboratories. The body is composed of twenty-two of the leading experts of the United States and Canada, who serve without recompense and supervise the technical work of the institution.

The Hampton Manufacturing Co., of Indianapolis, has been organized with a capitalization of $35,000, to manufacture a tire reliner. The organizers are Samuel Rubens, Simon B. Nussbaum and M. Moskin.

The Derrickson Manufacturing Co., of Muncie, Indiana, has been formed with a capitalization of $125,000, to manufacture a puncture-proof compound for tires. The principal stockholders are H. S. Osborn, R. C. White and H. L. Kitselman.

The factories of the Boston Rubber Shoe Co., at Edgeworth and Essex Fells, Massachusetts, shut down March 15, to remain closed until April 7 for the annual stock taking and repairs.

The $100,000 preferred stock of the B. & R. Rubber Co., recently offered to stockholders pro rata, has all been subscribed for. Shipments of the company for January and February are said to have increased about 25 per cent. over last year.

Receivers have been appointed for the Ferromatic Tire and Manufacturing Co., of Cleveland, which manufactured a spring tire.

The Bibb Manufacturing Company at Macon, Georgia, which owns seven or eight cotton factories in Macon and other points in Georgia, has had a large and increasing business during the last four years in the manufacture of tire fabrics. This is an old company and prior to its entrance on the tire fabric field, had been manufacturing other fabrics for over a quarter of a century.

Van Clief Bros., of 7111 Woodlawn avenue, Chicago, manufacturers of rubber cement and water-proofing substances, have recently doubled the size and capacity of their plant.

Charles E. Wood, previously with the New York Commercial Co., is now operating independently as a crude rubber dealer, with offices at 290 Broadway. Mr. Wood is handling all grades of Parás, eastern plantation, central and African rubbers. He was identified with the New York Commercial Co. for a long period.

L. Blitz, importer of crude rubber, will remove on May 1, from 5 Hanover street, New York, to the Maritime building, 8 and 10 Bridge street. Mr. Blitz was identified with the house of Livesey & Co. for a number of years, and handles a general line of crude rubber.

THE DREADNAUGHT TIRE AND RUBBER CO.

The Dreadnaught Tire and Rubber Co. has just been incorporated in Baltimore, Maryland, with an authorized capital of $1,000,000, for the purpose of making automobile casings. The company will have a site of about four acres, and expects to begin building operations within the next three or four weeks. The initial plant will consist of a main building 65 x 180 feet, three stories in height, made of brick and concrete, with a power house 35 x 50 feet. The main building will be laid out with reference to the addition, later, of wings, which may carry it completely around the power plant. The president is A. F. Gilbert; the treasurer, C. P. Triplett; the secretary, Walter E. Hill—all of Baltimore, and prominent in financial and social circles of that city. Mr. Wilmer Dunbar, very well known to the rubber trade, will be general manager and vice-president of the company, and will have full charge of the manufacturing operations.

DIVIDENDS OF RUBBER COMPANIES.

The board of directors of the Rubber Goods Manufacturing Co., on February 28, declared from the net earnings of the company the fifty-sixth regular quarterly dividend of 1¾ per cent. on the preferred stock, and a dividend of 6 per cent. on the common stock, both payable March 15, 1913, to stockholders of record of March 10.

Early in March the Intercontinental Rubber Co. declared a regular quarterly dividend of 1¾ per cent. on its preferred stock, payable March 31 to stock of record March 21.

The Walpole Tire and Rubber Co. has declared a regular quarterly dividend of 1¾ per cent. on preferred and 1 per cent. dividend on common stock, payable April 15 to stock of record April 1.

Canadian Rubber Co. has declared the regular quarterly dividend of 1¾ per cent. on preferred and 1 per cent. on common, payable April 1.

The Boston Belting Co. has declared a quarterly dividend of $2 a share, payable April 1, to stockholders of March 15.

The B. F. Goodrich Co. has declared a quarterly dividend on its preferred stock of 1¾ per cent., payable April 1, to stockholders of March 24.

UNITED STATES RUBBER CO.'S ISSUES.

Transactions on the New York Stock Exchange for four weeks, ending March 22.

COMMON STOCK, $25,000,000.

(The treasury of a subsidiary company holds $1,334,000.)

Last Dividend, January 31, 1912—1%.

Week	March	1..	Sales	34,610	shares	High	63	Low 57½
Week	March	8..	Sales	12,550	shares	High	63	Low 59¾
Week	March	15..	Sales	14,200	shares	High	61½	Low 59⅛
Week	March	22..	Sales	6,750	shares	High	60½	Low 59

For the year—High, 68¾, January 10; Low, 57½, February 24.
Last year—High, 67¾; Low, 45¼.

FIRST PREFERRED STOCK, $39,824,400.

Last Dividend, January 31, 1912—2%.

Week	March	1..	Sales	1,515	shares	High	106¼	Low 104¼
Week	March	8..	Sales	900	shares	High	106	Low 105⅞
Week	March	15..	Sales	1,300	shares	High	105	Low 104½
Week	March	22..	Sales	650	shares	High	104½	Low 104

For the year—High, 109, January 8; Low, 104, March 19.
Last year—High, 116; Low, 105¾.

SECOND PREFERRED STOCK, $9,965,000.

Last Dividend, January 31, 1912—1½%.

Week	March	1..	Sales	——	shares	High	——	Low ——
Week	March	8..	Sales	——	shares	High	——	Low ——
Week	March	15..	Sales	——	shares	High	——	Low ——
Week	March	22..	Sales	——	shares	High	——	Low ——

For the year—High, 81¼, January 9; Low, 78¾, February 13.
Last year—High, 85½; Low, 75.

SIX PER CENT. TRUST GOLD BONDS. $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week	March	1..	Sales	65	bonds	High	103¼	Low 102¾
Week	March	8..	Sales	30	bonds	High	102⅞	Low 102
Week	March	15..	Sales	86	bonds	High	102⅝	Low 100
Week	March	22..	Sales	6	bonds	High	101½	Low 101

For the year—High, 103¾, February 15; Low, 100, March 15.
Last year—High, 105; Low, 102½.

A TIRE COMPANY IN FLORIDA.

A report comes from Florida that a rubber company, to be known as the Seminole Rubber Co., will erect a plant in Jacksonville, that state, to manufacture automobile tires and other auto accessories in which rubber is used. The company is capitalized at $1,000,000, and expects to employ 500 hands and turn out 300 tires per day. It hopes to be in operation within three months' time.

THE FAMOUS YACHT OF THE MONATIQUOT CREW.

The sight of boys playing marbles back of the school house is not the only harbinger of spring; another sure sign that summer is not far away is the restlessness of the chronic yachtsman who begins in March to anticipate the delightful cruises of August.

The officers of the Monatiquot Rubber Co., of South Braintree, Massachusetts, own a little craft which they have named "Hypatia," and which they use during the summer for their own recreation and for the entertainment of their friends. One of the "Hypatia" crew who is already in anticipation skimming over the blue waters of Boston Harbor on one of those rare June days that Lowell used to write about, affectionately describes his boat as follows:

"She is about 45 feet of gracefulness and sturdiness, and there's a year for every foot of her. Her timber is as sound as the day she slid from the ways. An engine or something or other furnishes the power, and an awning, or whatever is the nautical term, keeps the rain from her deck-house. She was known once to have made nine knots per hour between Hangman's Island and Hull Gut, and she is said once to have cruised seventy consecutive miles off Boston Light. But it is her cabin, which can accommodate ten or twelve rubber men and her crew of Indians, known as the "Four Good Indians," that command the most attention.

"The pilot-captain of the ship is naturally one "Squantum," who has gained some considerable fame in rubber circles; while the technical member of the crew is "Monatiquot," nominally in charge of the power plant. In the commodious cabin, where there is every delight for the passenger, "Massasoit" and "Samoset" act as steward and chief mixer."

It would appear that a trip on the "Hypatia" is equivalent to a back-to-nature cure, or better still, a "Naturizing" treatment.

THE UNDERWRITERS' NEW LABORATORIES.

The Underwriters' Laboratories, Inc., have secured ten thousand square feet of additional land adjoining their holdings on East Ohio street, Chicago, and plan to extend their present buildings to provide additional space for hydraulic and chemical laboratories and offices. This follows the recent completion of a special building for tests of structural methods and materials, and will give the institution a total ground area of 26,600 square feet, a total floor area in buildings of 45,000 square feet and a yard space of 9,000 square feet. When the present extension is completed, the plant will represent an expenditure of $175,000, this amount having been contributed by the stock fire insurance companies.

THE RUTHERFORD RED INNER TUBE.

The Rutherford Rubber Co., Rutherford, N. J., is making a red inner tube which it calls the "Sterling," and it has adopted a method of bringing this to the consumers' attention, which, while expensive, is certainly convincing. It mails a cross-section of the tube about one inch wide attached to a card describing it and giving the price, and also suggesting a good way to test the qualities of the tube, namely, to make a cut or puncture in the sample and then tear it apart. This red tube is made of floating stock, and will not crack after long usage, as it is not heavily compounded. It has a cross grain to prevent splitting or "running."

100,000 GROSS OF JAR RINGS.

The B. & R. Rubber Co., North Brookfield, Massachusetts, recently shipped off to the South a single order of 100,000 gross of jar rings. This is not the company's record order, but it is the largest yet received this season.

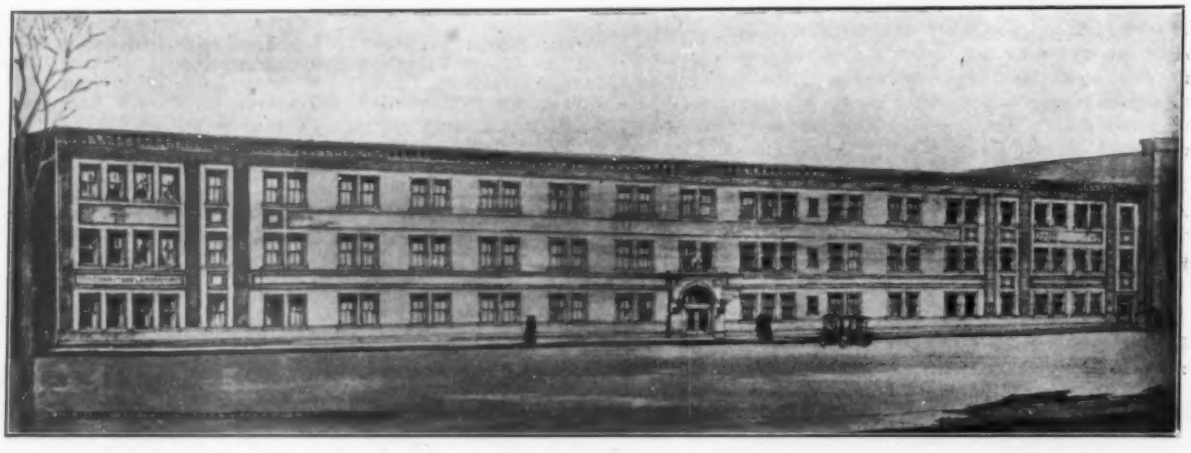
A STRIKING TIRE ADVERTISEMENT.

The Fisk Rubber Co., of New York, recently had a full page advertisement in the humorous weekly "Life" that was certainly different. It was printed in colors and in the upper left-hand corner there was a small panel showing a robust native tapping a rubber tree, from which prodigious drops of latex exuded. As these drops fell down the page they gradually assumed circular form until finally they appeared as full fledged Fisk tires on a red touring car going at a spanking pace. This advertisement leaves the impression that Fisk tires are made of genuine rubber—you can see it coming out of the tree—and that it is pure rubber and of very recent origin. It is a striking advertisement.

A RUBBER FACTORY TO BUILD A CLUB-HOUSE.

The Republic Rubber Co., of Youngstown, Ohio, have just embarked upon a project that ought to be very effective in making the 1,500 employees of that plant pleased with their lot. The company has decided to build a large and commodious club house for the use of its operatives. The house will be just across the street from the company's main offices. It will be an attractive three-story brick building 60 x 130 feet in size.

The first floor will be given over to bowling alleys, pool tables, shower baths, reading and lounging rooms; the second to a lunch room in which all employees can secure hot coffee and eat their lunch, and the third floor will be devoted to dining room for office employees. The second floor also will be used for meetings in which employees are interested.



Building of the Underwriters' Laboratories.

SIX-BY-FORTY TIRES.

The Fisk Tire Co. is said to have the distinction of making the largest pneumatic truck tires manufactured. They make a tire 6 x 40, used exclusively for fire apparatus, protective wagons and similar vehicles, where tires of great durability and strength are necessary.

"THE PRICKING OF THE BUBBLE."

Mr. Frank A. Seiberling, president of the Goodyear Tire & Rubber Co., gave some very interesting testimony before the Senate Committee appointed to investigate the Akron strike. But nothing that he said impressed his hearers more than this reference to the effect of the strike upon the market prices of the stock of some of the tire companies. He observed: "Perhaps one feature of value has come out of it all; namely, the pricking of the bubble of fictitious values on the stocks of the various corporations. Speculators had carried the value of Goodyear common stock to a basis of $465 per share ten days ago; it is now around $350; while its intrinsic value is approximately $125. Let this good work go on, and we will not have as much false reasoning when this fictitious basis of values has been properly exploded."

DIVINE TIRES.

The Divine Tire Co., of Utica, New York, filed incorporation papers early in March. The capitalization is $225,000, $100,000 preferred and $125,000 common. The directors are Bradford H. Divine, Charles W. Wicks and A. James Eckert, of Utica; William Dalton, of Schenectady, and Edward F. Torrey, of Clinton.

NEW INCORPORATIONS.

The Akron Tire & Rubber Co., of Boston, February 28, 1913; under the laws of Massachusetts; authorized capital, $15,000. Incorporators: Abraham Palder, 6 Milford street, Boston; Max Laserson, 99 Brunswick street, Roxbury, and Charles Braunstein, 205 Chelsea street, East Boston—all of Massachusetts. To manufacture, buy, sell and deal in tires, rubber goods, etc.

The Alliance Rubber Co., March 7, 1913; under the laws of Ohio; authorized capital, $100,000. Incorporators: George C. Russell, Milton Bejach and W. H. Purcell. Location of principal office, Alliance, Ohio. To manufacture any and all kinds of rubber goods, etc.

American-West African Corporation, March 7, 1913; under the laws of Maine; authorized capital, $250,000. Incorporators; James J. Wardrop, 160 Fifth avenue, New York; George Walker, 12 Martha place, Passaic, New Jersey, and George Douglass Wardrop, 293 Welling street, Richmond Hill, New York. To carry on a general rubber business in all its branches, including importing and exporting, etc.

Continental Rubber Works Selling Agent Incorporated, March 8, 1913; under the laws of New York; authorized capital, $3,000. Incorporators: Clarence E. Thornall, 50 Church street, New York; William A. Darling and Walter S. Tullis—both of 35 Murray street, New York. Location of principal office, New York. To deal in rubber goods, tires, etc.

Dreadnaught Tire & Rubber Co., February 24, 1913; under the laws of Delaware; authorized capital, $1,000,000. Incorporators: F. D. Buck, George W. Dillman and B. M. Grawl—all of Wilmington, Delaware. To manufacture and deal in tires, etc.

Du Fay Tire Filler Co., February 28, 1913; under the laws of Illinois; authorized capital, $10,000. Incorporators: Joseph C. Fuhs, Will T. Lostetter and Lebel M. Wheeler. Location of principal office, 714 South Clark street, Chicago, Illinois. To manufacture and sell a compound for filling tires for automobiles.

F. C. D. Inner Tube Protector Co., January 30, 1913; under the laws of New Jersey; authorized capital, $150,000. Incorporators: Gilbert S. Field, 379 Trumbull avenue; James H. Christensen, 1653 Second avenue, and Thomas Dick, 26 Cadillac square—all of Detroit, Michigan. To manufacture, purchase, etc., land and wares of every description, and to carry on any business, etc., so acquired.

Franco-American Safety Tire Co., February 17, 1913; under the laws of Delaware; authorized capital, $100,000. Incorporators: Emile Le Fevre, Eugenie Wolff and Armand Gaillard—all of Philadelphia, Pennsylvania. To manufacture and deal in automobile tires, etc.

John A. Gallagher Co., Inc., March 13, 1913; under the laws of New York; authorized capital, $2,000. Incorporators: Edward G. Weiser, 632 Grant street, Buffalo, New York; John A. and Ida B. Gallagher—both of 215 Crescent avenue, Buffalo, New York. Location of principal office, Buffalo, New York. To manufacture and deal in press blankets of rubber and felt, printers' supplies, etc.

Henschel Tire and Rubber Co., March 24, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Rudolph and Anna Henschel—both of 147 East 90th street, New York, and William A. Wollman, 1402 Lexington avenue, New York. Location of principal office, New York.

Hesco Tire Co., February 15, 1913; under the laws of Illinois; authorized capital, $300,000. Incorporators: C. S. Hayden, John Schwarz and Joseph Ellis—all of Chicago, Illinois. Location of principal office, No. 3204 South Michigan avenue, Chicago, Illinois. To manufacture and sell tires and automobile supplies, etc.

Mercer Rubber Co., March 19, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: William A. and James G. Dale—both of 340 East Fifty-second street, New York, and William H. Saijen, Jr., 294 Nassau street, Princeton, New Jersey. Location of principal office, New York. To deal in rubber goods.

Merritt-Elliott & Co., March 8, 1913; under the laws of New York; authorized capital, $350,000. Incorporators: Daniel T. Merritt and Charles E. Elliott—both of 130 Duane street, New York, and L. D. Apsley, Hudson, Massachusetts. Location of principal office, New York. To deal in boots, shoes, rubber goods, etc.

Mohawk Rubber Co., of New York, Inc., March 24, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Morris E. Mason and Charles W. McLaughlin—both of Akron, Ohio, and Milton Dammann, 141 Broadway, New York. Location of principal office, New York. To deal in tires and rubber goods.

Star Supply Co., Inc., March 14, 1913; under the laws of New York; authorized capital, $800. Incorporators: Charles W. Hardin, 315 West Ninety-ninth street, and Gustave A. Lepkem, 558 West 164th street, and Frederick C. Iringer, 507 Manhattan avenue—all of New York. Location of principal office, New York. To manufacture rubber hose and hose couplings, etc.

United States Graphite Co., February 21, 1913; under the laws of Illinois; authorized capital, $500,000. Incorporators: Eugene McSweeney and A. D. Eddy—both of Saginaw, Michigan. Location of principal office, 18 North Clark street, Chicago, Illinois. To sell graphite and graphite products.

Divine Tire Co., Inc., March 12, 1913; under the laws of New York; authorized capital, $225,000. Incorporators: Charles W. Wicks, 770 Genesee street; A. James Eckert, 108 Genesee street, and Bradford H. Divine, 202 Whitesboro street—all of Utica, New York. Location of principal office, Utica, New York.

Morgan & Marshall Co-operative Rubber & Tire Co., March 3, 1913; under the laws of Delaware; authorized capital, $500,000. Incorporators: R. J. Marshall, East Liverpool, Ohio; Morgan Howelk, Pittsburgh, Pennsylvania, and Ila M. P. Marshall, East Liverpool, Ohio. To deal in rubber tires and tubes, sundries and other rubber supplies.

THE SEAMLESS COMPANY ISSUES STOCK.

The Seamless Rubber Company, of New Haven, Conn., which makes the Bragg stitched tire, has certified to an issue of 5,000 shares of its treasury stock. The issue makes the total outstanding stock $1,000,000, of which one-half is common.

PRESIDENT WORK'S ANNUAL REPORT.

At the annual meeting of the B. F. Goodrich Co., held March 12, President B. G. Work read the following report:

"Since the purchase of the Diamond Rubber Co., on April 1st, 1912, excellent progress has been made in the unification of the Goodrich and Diamond organizations and their plants, providing thereby for great improvement in economy and a large increase in capacity.

"The report of the treasurer as certified by public accountants shows the company to be in a strong financial condition.

"As I pointed out in the published report, the bringing together of two large organizations entails a great many readjustments, the benefits of which do not appear immediately. It has been the policy of your directors to place the company upon a sound economical basis of operation as quickly as possible, and, while this may have interfered with the showing of earnings for the period, they feel that the best interests of the stockholders have been conserved for the future.

"The volume of business transacted during the nine months was practically the same as that of our company combined with that of the Diamond company for the corresponding period the previous year.

"It is unnecessary for me to comment on the disturbed labor conditions which have existed among the rubber industries in Akron during the past month, as you are all undoubtedly familiar with them.

"In reference to the future, I believe that it should be the policy of this company to husband its resources and accumulate a substantial surplus, and I shall not recommend to the directors the payment of a dividend on the common stock for the current period, nor until such substantial surplus over and above the preferred dividend and amortization requirements shall have been accumulated from the earnings."

GOODRICH STATEMENT FOR NINE MONTHS.

THE statement of The B. F. Goodrich Co., Akron, Ohio, for the nine months ending December 31, 1912, shows net sales amounting to over $37,000,000; with net earnings of over $3,500,000 and undivided profits for that period of a little over $800,000. The detailed statement is given below:

INCOME ACCOUNT.

Net sales nine months	$37,533,861.00
Expense	33,814,526.87
Net profit	3,719,334.13
Other income	571,844.51
Total income	4,291,178.64
Depreciation	440,851.73
Interest on bills payable	327,837.92
Net profit nine months	3,522,488.99

ASSETS.

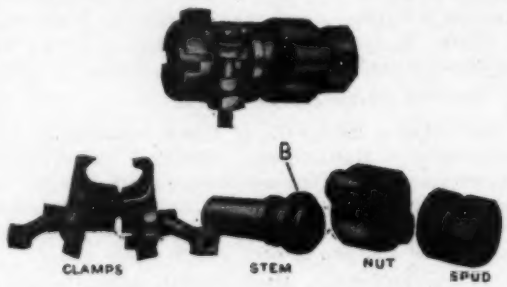
Plants, good will, etc	$70,685,721.89
Investments other companies	1,635,957.93
Twenty thousand five hundred and eighty-seven shares preferred at cost.	2,227,117.03
Inventory	16,226,639.63
Trade accounts receivable	5,147,703.47
Other accounts receivable	1,223,186.26
Bills receivable	606,944.44
Cash	803,224.60
Prepaid accounts	229,618.98
Total	$98,786,114.26

LIABILITIES.

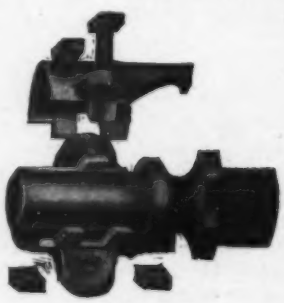
Common stock		$60,000,000.00
Preferred stock		30,000,000.00
Bills payable		6,479,410.54
Accounts payable		653,185.45
Sundry		547,283.03
Contingent reserve		300,000.00
Nine months' profit	$3,522,488.99	
Preferred dividend	1,519,505.75	
Common dividend	1,196,748.00	
Total dividend	$2,716,253.75	
Undivided profit		806,235.24
Total		$98,786,114.26

THE MULCONROY COUPLING AND NIPPLE.

TWO mechanical devices extensively used by rubber manufacturers are the Mulconroy Coupling and Nipple, said to be original types. They are specially designed for high pressure steam, air and water and are described as very durable.



The new features of the coupling are represented in the smooth stem, rounded and tapered, permitting easy access into the hose without injury to the tube, and a grooved lip at the spud-end of the stem, which prevents loss of the washer, a frequent cause of annoyance and lost time. The improved clamps cover the exterior of the hose so completely that when they are tightened they do not injure the hose cover itself. They are sufficiently long to cause such pressure at the end of the hose or stem, so as to occasion no injury. The projections over the collar render it impossible for the coupling to blow off, irrespective of pressure.



The new Mulconroy nipples are made with a thread of such size as to render the use of reducers unnecessary. For instance, ½-inch nipples are made with either ¼-inch, ⅜-inch or ½-inch thread, and the ¾-inch nipples with either ⅜-inch, ½-inch or ¾-inch thread. Both couplings and nipples are made from malleable iron and threads are standard iron pipe.

RUBBER WORKERS GET AN INCREASE.

The A. & A. Rubber Co., South Framingham, Massachusetts, early in March posted a notice announcing a 5 per cent. increase in the wages of all its employees, to take effect immediately. Voluntary increases in the wage rate are great lubricators of factory operations.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THIS North of England Show, organized by the Society of Motor Manufacturers and Traders, was held at Manchester February 14 to 22. There were really two exhibitions, the pleasure cars being located at the Rusholme exhibition buildings in the suburbs and the commercial vehicles at the city exhibition hall in the center of the town near to Deansgate, where the offices and show rooms of so many motor and tire companies are to be found. With the idea of expediting business and relieving the congestion of former years no free admission tickets were given to exhibitors to distribute among their friends, the result being that at no time were the premises overcrowded. The lessened attendance, however, must not be taken as reflecting in any way upon the importance of the show, which was the largest and most complete ever held in the provinces. Prospective purchasers attended in satisfactory numbers and the bulk of exhibitors seem to have been well satisfied with the business done. This applies more particularly to the motor vehicle show which, though sparsely attended by the public, was officially visited by deputations from corporations and other public bodies interested in traction engines and motor fire engines.

MANCHESTER MOTOR SHOW.

The question of motor lorry transport (the lorry is a long low platform wagon) is one of great interest to the industrial centers of Lancashire. It is recognized that for going to and fro in towns the horse lorry has the advantage, but in conveying goods such as machinery and cotton for distances of five to twenty-five miles the motor vehicle is being increasingly used. With regard to the port of Manchester it is estimated that 7 per cent. of the traffic is now dealt with in motor lorries, and, though this figure is not an imposing one, it is higher than pertains to any other British port. Though motors of several types and capacities are employed, there is a consensus of opinion that the best paying vehicle is the 5-ton wagon with rubber tires and with steering lock so arranged as to enable the wagon to turn in a small space. It has not been customary in these notes to go beyond tires when referring to motor shows, and with regard to these important accessories there was very little of novelty. Practically all the prominent British makers, as well as half a dozen leading European manufacturers, had stands, the show in this respect being far more complete than any of its predecessors. Shrewsbury, Challiner and Dunlop tires were shown at both Rusholme and City Hall, the other makers contenting themselves with one exhibit. Various bodies of the plastic nitrocellulose class have now for some time been used as leather substitutes in the upholstering of cars, and a quite modern use of plastics is the case of the wind-screen.

STANDARD specification and tests for rubber draw-bar springs used on private owners' wagons have recently been issued from the London Railway Clearing House. Embodied with the letterpress is a drawing showing the construction and dimensions of the spring, it being also laid down that the manufacturer is to guarantee a life of three years. After this it is not surprising to read that only vulcanized rubber of good quality is to be used, and that this must be thoroughly compressed, of a homogeneous character throughout, and free from defects. With regard to tests five per cent. of the springs are to be submitted for testing purposes. Rigid adherence to the detailed specification is not a *sine qua non*, as it is stated that springs of approved design may be used, provided they comply strictly with the test enunciated. This specification, I may say, is a new departure, buffers in the past having always been supplied according to the particular manufacturer's ideas of what is wanted. If it has the effect of doing away with the cheap buffer it will serve a useful purpose.

RAILWAY BUFFERS.

IN February occurred the death at the age of 72 of Mr. Benjamin Blundstone, manager of David Moseley Son's India Rubber Works, Manchester. He had been in the employ of the firm for 52 years, having commenced work with Mr. David Moseley, founder of the firm and grandfather of the present partners. The deceased was of a retiring disposition and was very little known in the trade, though Mr. J. B. Dunlop consulted him in 1888, soon after he invented the pneumatic tire, and for some years they worked together at this matter. As late as January 28 of this year he took out a patent for improvement in pneumatic tire air tubes.

OBITUARY NOTICE.

IN the "India Rubber Journal" of December 7, 1912, Frederick Kaye and R. S. Sharp describe a method for the estimation of sulphur in vulcanized rubber and other organic compounds. Of late years several new or modified processes have been evolved by different chemists, but it is generally recognized that all of these have some drawbacks more especially in point of accuracy or in the length of time required for the determination. An important point which seems to be frequently lost sight of is the extremely heterogeneous character of what is sold as vulcanized rubber, and it may easily happen that a method which will work well for a certain range of compounds will prove unsatisfactory in the case of other vulcanized rubbers. This is testified in the variations in the sulphur figures which usually characterize rubber analyses when carried out by different chemists; though the other figures may agree closely, yet it is generally found that those for sulphur differ considerably. A matter which has perhaps not always been allowed for is the migration of sulphur from the interior to the exterior of the rubber goods, thus leading to segregation. Unless therefore each analyst takes his sample in exactly the same way discrepancies in the results may easily occur.

NEW METHOD FOR SULPHUR ESTIMATION.

Not to linger further, however, on generalities, I proceed to the new method which resembles a good many previous ones in being a fusion method, while it differs from them in that zinc oxide is the base of the fusion mixture. The process in a few words is as follows: .25 to .5 of a gram of the finely divided sample is weighed out into a porcelain crucible and mixed intimately with eight times its weight of pure zinc oxide and four times its weight of potassium nitrate. Ignition with the lid on is effected by cautious heating after a layer of pure zinc oxide has been put in the crucible. After the reaction the crucible is heated strongly and after cooling the contents are dissolved in hydrochloric acid and the sulphur weighed as barium sulphate in the usual way. This method is certainly a simple and rapid one, and is admirably adapted for a great many cases. In all fusion methods, as distinct from wet methods, a good deal depends upon the state of subdivision of the rubber; i. e., the finer the particles the better the result. Unfortunately there are many rubbers which either from their purity or their oil content cannot be finely divided, and it would be interesting to know how far the accuracy of this method is affected in cases where the rubber cannot be finely divided.

One other point which is not without importance may be mentioned. This has reference to the presence of sulphates such as barytes and sublimed lead in the mixing. These are decomposed to a variable extent by the fusion mixture and will add considerably to the amount of sulphur found, thus necessitating a correction if the sulphur of vulcanization is the object of the

determination. Such a source of error applies also to other fusion methods, and further, as sulphates are by no means widely employed in rubber compounding, it need not be taken as destructive criticism of what promises to be a decidedly useful process both in point of accuracy and saving of time.

TRAVELERS' AGREEMENTS.

ON February 21, in the King's Bench Division, London, Mr. J. A. Heath, late traveler for the firm, was sued by the Continental Tire and Rubber Co. (Great Britain), Limited, in respect to an agreement not to enter the service of a competing firm for one year after leaving the plaintiffs' employ. After a year's service with the plaintiffs Mr. Heath was discharged with a month's salary in lieu of notice, and subsequently was engaged by the Bavarian Rubber Co. Mr. Heath had had considerable experience in solid tires, the manufacture of which is a comparatively new departure for the Continental Co., and it appears that he brought in business amounting to about £1,000 a year with Messrs. Pickford, the well-known carriers. This business had recently, the plaintiffs stated, been transferred to the Bavarian Rubber Co., which sold Metzger tires. Evidence was given by Mr. Wolff, manager of the Michelin Tire Co., that his company's travelers all entered into similar agreements, five years being a common period of time. The main defense was that such agreements were harsh and against the public interest, especially in the present case, which applied to all rubber goods, whereas the defendant's business at the Continental Co. had to do with solid tires alone. The judge found for the Continental Co., holding that it was incumbent on the defendant to keep to his agreement. Recent decisions of the courts, he said, were against such contracts being held to be in restraint of trade, freedom to make agreements as to terms of service being considered as of importance in these days of trade competition. The judge also thought that the application of the agreement to rubber goods generally was fair, in view of the facilities a tire traveler would have of getting information on other goods from a company doing a general business. The result of this case is doubtless considered satisfactory by those tire companies which make it a rule to bind their travelers down. This procedure, though common, is not universal, as I know of at least four large manufacturers who do not insist on any such agreements being entered into. In the bulk of cases where such agreements are signed it is more or less on compulsion, the travelers as a whole being naturally averse to them because of the prospect of being out of work for one or more years, if their engagements are suddenly terminated. That this feeling is general is seen in the action which is being initiated by a certain travelers' association to have the matter discussed, with the view of getting all travelers to agree not to sign any such documents. It is recognized that it is only by concerted action that any effective steps can be taken to deal with the matter. There is, of course, plenty to be said on the other side, but space prevents the matter being discussed now at greater length.

ENGLISH WOMEN WEARING SUSPENDERS.

The differences between men and women grow less with the revolving years. One of the vital distinctions for some time has been the fact that men wore suspenders and women did not; but that distinction is soon to be obliterated—possibly. The London department stores have recently displayed, among their other attractions for women, feminine suspenders. Just how generally they will be adopted remains to be seen. Some women hardly appear to need them, but for perpendicular spinsters, for instance, who are straight up and down, suspenders would certainly appear to be a convenience. According to the best information at hand, this article has not yet appeared in the American stores.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

A WELL-KNOWN MAKER OF GLASS MOLDS.

One of the best known makers of glass molds for rubber goods is Arnold Prox, of Leyland, near Preston, England. He has been blowing glass molds for rubber manufacturers for a great many years. He began making glass teat molds for the trade about 20 years ago, and has supplied a great many of the leading English firms; such for instance as Imgram & Son, of London; Macintosh & Co., of Manchester, and John Dowell & Son, of London. He has recently applied for a patent for a dipping-board, which is very simple and inexpensive, and said to be a great time saver.

THE LONDON COTTON AND FIBRE EXHIBITION, 1914.

Rubber, however important, is only one of the tropical products which have been taken up by the industrial nations of the world. Hence much attention is being paid in the East to the First International Exhibition of Cotton, Fibres, Tropical Products and Allied Industries, to be held in London June, 1914, concurrently with the Fourth International Rubber Exhibition.

Efforts are being made by the exhibition authorities to secure the co-operation of local experts in tropical countries. Reports from Manila state that Mr. M. M. Saleeby, chief of the fiber division of the Bureau of Agriculture, has been invited to join the advisory committee of the exhibition. Director F. W. Taylor and Mr. Otis W. Barrett, chief of the horticultural division, have also been asked to participate.

There are so many points of connection between rubber and fibres in their distribution, if not in their cultivation, that the two exhibitions will be complementary to each other.

PURCHASE OF MANUFACTURED RUBBER GOODS.

In commenting upon the recently published work of Pierre Pellier on the above subject, the "Revue Internationale" of Paris remarks that buyers of rubber manufactures, in addition to the necessary information as to the nature and properties of rubber need guidance as to the choice of qualities specially applicable to their contemplated employment.

Rubber, it is remarked, has many new and growing applications, being required in most branches of industry. From pumps to pneumatic tires and balloon coverings it is used for the most varied purposes. It would, however, be a mistake to think that for all uses it is indispensable to insist on a large proportion of rubber or upon the best qualities. In many cases it is necessary to incorporate with the rubber other substances in greater or less quantity, imparting to the compound special qualities in view of the uses contemplated.

To make a judicious choice it is necessary to be well acquainted with the properties of all the substances entering into the composition of manufactured rubbers, and in particular the influence of each of them upon the qualities of the compound.

In further illustration of this point, it is added that vulcanized rubber placed in contact with liquids not exercising any chemical action on it, such as water, only absorbs a small quantity of these liquids.

CORK-LINED BALLOONS.

ONE of the theories, and one quite widely accepted, advanced to explain the disastrous termination of Vaniman's balloon experiments, accounted for the explosion of the ill-fated "Akron" by the fact that the heat of the early sun breaking suddenly from the morning mists inflated the gas of the balloon so rapidly that the fabric was not able to stand the strain, and burst. A German manufacturer believes that he has found a way of counteracting the effect of external heat on the gas enclosed within a balloon. He is making a balloon fabric with a layer of pulverized cork on its inner side, on the theory that cork being a very poor conductor of heat, will render the enclosed gas less liable to rapid expansion. The cork is not a separate layer, but is incorporated and vulcanized into the fabric itself.

GROSS LICHTERFELDE MATERIAL TESTING BUREAU.

By Our Regular Correspondent.

THE annual report of the Gross-Lichterfelde Material Testing Bureau, dealing with the year ending March 31, 1912, records the work of the establishment in various branches of testing, including rubber, both crude and manufactured.

Among the samples tested was one of crude rubber, respecting which it was desired to ascertain whether it was really *Hevea*, so far as this point could be ascertained by the known process. The test made showed 2.1 per cent. of components soluble in acetone, which were almost completely saponifiable, but did not display optical activity. On the basis of these facts it could be stated that the sample was probably of *Hevea*.

Another sample of rubber was to be tested for loss in washing, which exceeded 20 per cent. As, however, the sample had been shipped during the hottest season and in a bag which admitted water, the report called attention to the fact that a considerable portion of the water must have been taken up on the way and in storage.

Numerous tests were made of technical rubber goods, such as hose, etc., with the object of ascertaining their chemical composition. Samples of balloon material in the unused as well as used state were subjected to comparative chemical investigation. From the results of the analyses it was to be determined whether the destruction of the used material was produced by the gas used in filling the balloon or not. The analyses only displayed slight differences in the chemical composition of the two samples. The changes noticed corresponded with those which might in practice be expected from the influence of air, light and mechanical causes (apart from that of the gas).

VULCANIZATION.

The large number of vulcanization tests had showed that physical absorption was combined with a chemical reaction of the sulphur with the rubber. The former occurs in a moment, while the latter often takes a considerable time. Vulcanization can take place at any temperature, even at a normal degree, but its speed varies with the temperature.

CRUDE AND VULCANIZED RUBBER.

The analyses of vulcanized and crude rubber included in the first place different forms of the bromide process. In this way a number of sources of error were discovered. Consequently, for determining the rubber content of crude rubber or rubber compounds it is necessary to resort to indirect analysis. That is, the other components are defined and the difference between their total and 100 per cent. is assumed to be rubber.

DEVELOPMENT OF GERMAN COLONIES.

In a retrospect of the past six years in the German colonies, Dr. Wohltmann, editor of the "Tropenpflanzer," advocates the importance of training young German agriculturists, both theoretically and practically, with a view of utilizing their knowledge and experience for the benefit of the German colonies. The number of such students is annually increasing. Such has been the policy of the German government since 1907.

Respecting the prospective rubber supplies from the German colonies, the author remarks:

"Only the next few years will afford us a reliable idea of how much good rubber is to be obtained from our colonies. On the one hand, the best methods of cultivation, tapping and collecting, are the subject of much discussion; while on the other hand, the trees planted in East Africa and Kamerun are in part so young, or have been in bearing so short a time, that an indisputable prognosis cannot be made. * * * It is today certain that the results of our plantations will not be unfavorable. What yields and profits they will show in the future, we must wait to see."

THE JAPANESE WASTE RUBBER AND RECLAIMED RUBBER TRADES.

By Our Regular Correspondent.

WASTE rubber is supplied to Japanese consumers from two sources, domestic collection and imports. In the former shape it is gathered by ragpickers, who go from door to door in search of various kinds of waste, including waste paper and rags. Each broad class of waste is then handled by houses in the particular branch. Thus waste rubber passes through the hands of waste rubber dealers. Waste rubber is also obtained in more or less important quantities through tenders made to the naval and military administrations and large industrial corporations.

Another source of waste rubber is the purchase of old cycle and motor car tires from dealers in those articles.

Imports of waste rubber are from Shanghai and other points, representing an average of $1,500 a month. Such imports take place when Japanese waste is scarce or dear. The latter is, however, in most cases, preferred by the Japanese rubber manufacturers. Waste is sorted into black, red and white; in each class there being superior, medium and inferior grades.

The quantity of waste rubber produced in Japan is estimated at about 2 million pounds, and the value at about $200,000. Black waste is in the largest quantity and varies in price from 5 to 15 cents per pound. The production and consumption of Japanese waste rubber are alike increasing at the rate of 20 per cent. annually. Most of the waste rubber produced was originally of Japanese manufacture. Tokyo is the principal center of the Japanese waste rubber trade, the waste being shipped thither from Osaka and other points, for eventual distribution among the principal cities of Japan.

RECLAIMED RUBBER—JAPANESE AND IMPORTED.

At one time Japanese rubber manufacturers used to mix waste rubber with crude rubber, in order to cheapen their product. The waste, after being mixed with certain ingredients, was brought into an unsulphurized state by mixing it on a roll with certain ingredients. This compound was designated as "reclaimed rubber" by Japanese manufacturers and used for the production of molded goods, such as "tabi" soles, tubes, tires, etc., either alone or in conjunction with crude rubber.

Reclaimed rubber, properly so called, is not produced in Japan, but is imported to the extent of about 15 tons a month. It is principally consumed by several insulated wire makers, who must have the genuine imported reclaimed rubber, as they cannot use the Japanese article; although the latter can be used for the manufacture of other goods, such as molded articles. The efforts made to get copper wire wrapped or tubed in thin sheets of the Japanese so-called "reclaimed rubber" have been unsuccessful. The imported reclaimed rubber principally comes from England and the United States.

DUTY ON IMPORTED RECLAIMED RUBBER.

The Japanese duty on reclaimed rubber is 20 per cent., while the article is free of duty in England, the United States, Austria, Italy, Denmark, Norway and China. Several years ago there was no duty in Japan, but a duty of 10 per cent. was imposed to meet the case of the Dunlop Rubber Co. (Far East), importing free of duty as "reclaimed rubber," a compound, the ingredients of which in some cases paid 5 to 20 per cent. Under the new Japanese tariff it was made dutiable at 20 per cent. Waste rubber was still retained on the free list as being of benefit to Japanese manufacturers, but reclaimed rubber was treated as a manufacture of waste, at the lowest rate applicable to manufactured rubber.

Efforts are being made to get the duty reduced to 10 per cent., in which the correspondent of THE INDIA RUBBER WORLD is taking an active part. This rate has met with the approval

of the principal manufacturers. It will be submitted to the legislature through the Custom House Bureau of Finance. Mr. Ernest E. Buckleton, who has been visiting Japan in the interests of his company, the Northwestern Rubber Co., Litherland, Liverpool, England, as well as various Japanese manufacturers, advocate the freedom from duty of reclaimed rubber, but they in some cases fear a repetition of the attempt to import as reclaimed rubber an unvulcanized compound, the separate ingredients of which would pay from 5 per cent. to 20 per cent.

JAPANESE CRUDE RUBBER IMPORT STATISTICS.

Official Japanese statistics show the following comparative results for the last three years:

	Pounds.	Value.
1910	1,580,918	$1,515,093
1911	2,054,864	1,530,008
1912	2,004,010	1,514,560

The quantities for 1911 and 1912, it will be remarked, are about equal, and in each case represent an increase of about 25 per cent. on the figures of 1910. Owing to the depreciation of the article in the two later years, the value still remained about the same.

THE CHINESE MARKET FOR RUBBER GOODS.

A WRITER in a recent issue of the "Gummi-Zeitung," discourses at some length upon the fact that the German rubber trade—and particularly the rubber footwear trade—has not been able to make any conspicuous progress in the Chinese market. In this particular the German rubber trade does not stand alone. The American rubber trade has enjoyed no very glittering success in this direction.

For instance, in the line of rubber footwear, American exports of boots and shoes to China are noticeably smaller now than they were some years ago. Nine or ten years ago

CHINESE SANDAL.

some of the American manufacturers of rubber footwear made a special Chinese rubber shoe, similar in shape to the ordinary sandal that the Chinaman wears, with a pointed rising toe, thick sole without heel, and without any arch. The accompanying cuts show some of the styles manufactured for Mongolian consumption. At one time this trade reached the

CHINESE SANDAL WITH LOW HEEL.

fair proportions of 200,000 or 250,000 pairs a year, with a net value to the American manufacturer of from $65,000 to $85,000. These shoes were made at a very low price, so that the Chinaman could get a pair at retail at a price in the neighborhood of 50 cents. But that was when crude rubber was considerably lower than it is now, and with the rise in the price of rubber, and the consequent increase in the price of manufactured goods, the Chinaman went back to his native shoes and dropped the American-made Chinese "golosh"; so that now the value of American-made rubbers going to China is very small.

The voluminous book on statistics, called "Commerce and Navigation of the United States," issued by the Department of Commerce and Labor, gives the following valuation of American rubbers sold to China for the last five years:

1907	3,850 pairs	$4,414
1908	2,055 pairs	2,360
1909	386 pairs	416
1910	385 pairs	447
1911	318 pairs	620

This certainly is nothing to boast about.

The entire rubber exports (including all articles) for the last three years as given by the same authority are as follows:

	1909.	1910.	1911.
Belting, hose and packing	$10,172	$12,265	$12,372
Boots and shoes	461	447	620
Tires for automobiles	Not specified	Not specified	590
Other tires	Not specified	Not specified	38
All other goods	6,455	7,125	4,883

The automobile is seen daily in Chinese cities, more and more of them being constantly purchased by rich Chinese merchants. Solid tires are being used in an increasing scale,

CHINESE GAITER.

particularly in connection with the improvement in the character of the rickshaws used.

Rubber goods are likewise profiting by the extension of demand for railway and electrical purposes.

There is also a demand for rubber rings in Shanghai, for use in preserving fruit for the European market.

BALATA INDUSTRY AND RUBBER PLANTING IN BRITISH GUIANA.

At the opening of the Combined Court of the Colony of British Guiana, the Governor referred to the promotion of Mr. F. A. Stockdale, the Assistant Director of Science and Agriculture, to the post of Director of Agriculture of the Island of Mauritius, and to the appointment in his place of Mr. Keith Bancroft, of the Federated Malay States Agricultural Department; upon which he congratulated Professor Harrison. He added:

"I trust that Mr. Bancroft may be able to take up the important question of investigating the best method of extracting the latex of the balata tree and also that the weight of his opinion may be used to induce planters in this colony to more seriously consider the planting of Pará rubber. I have inspected several estates and small plantations of this product but nowhere have I found the necessary care and attention being given to the planted area. This is a great disappointment to me, for the few trees I have seen properly attended to prove, as might be expected, that this tree grows here as freely and satisfactorily as in the Eastern Hemisphere."

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

WHILE to the outsider matters in balata circles are quiet, the present is by no means a period of waiting. The short rainy season is drawing to a close and in a couple of months—possibly less—we shall have the long rainy season upon us. Most companies, therefore, which intend serious business this year, are getting ready to dispatch their expeditions, especially those whose grants are in the far interior. There is no reason at present to anticipate other than a successful season. Up to January 30 the exports have been 90,932 lbs. as against 11,839 lbs. exported to the same date last year.

THE ASSISTANT DIRECTOR OF AGRICULTURE—A GOOD APPOINTMENT.

An appointment has now been made to the Assistant Directorship of Agriculture, rendered vacant by the promotion of Mr. F. A. Stockdale to the Directorship of Agriculture of Mauritius. The appointment has been given to Mr. Keith Bancroft, B.A., who is at present in the Colonial Service in the Federated Malay States. The appointment is an exceedingly good one, because Mr. Bancroft will not only be able to do much to assist rubber cultivation, but, being a Barbadian, he will by no means be a stranger to the West Indies. Coming from the Malay States, where he has had an opportunity to study the *Hevea* from the scientific as well as the practical standpoint, he should prove of immense value to the owners of young *Hevea* plantations.

THE FELLING OF BALATA TREES.

A good deal of discussion has been created in the neighboring colony of Dutch Guiana on account of the Government having given A. F. C. Curiel permission to experiment in the felling method of bleeding balata, over an area of 8,640 hectares (21,600 acres). The Government's action is described as unconstitutional, and complaint is to be made to The Hague. An echo of the Surinam dispute has been heard in this colony. The "Daily Chronicle," dealing with the Surinam dispute, and with an article on the subject in the January number of THE INDIA RUBBER WORLD, says: "Into the merits of the system we do not propose to enter. The subject is largely in the domain of theory. We have heard it stated by equally competent authorities that the tree yields more latex when it is felled than when standing, and also that it yields less. This is a thing that perhaps our authorities will be able to tell us in the future—the not too distant future, we hope. Nor do we propose now to enter into the very alluring figures that have been placed before us regarding the value of the felling method. Mr. Henry Daley, who was a prime mover in the business, said that the cost of collection would be one-third of what it is now, and the output would be three times as great; that the balata licensees would be willing to pay a royalty of six cents per pound of balata, and that 5,000 men would be provided with work for 25 years, from which the Government would draw in royalties $100,000 per annum, which would pay the guarantee of interest. A very attractive prospect, but just why we should sacrifice our balata trees for the purpose of providing company promoters with a guarantee of interest on their capital, we do not know. It is a somewhat curious thing that this proposal should have come—not from the old established companies, but from those that came into the colony on the crest of the rubber boom. Looking back at the proposal at this period of time, we can see that it is fortunate that the project came to nothing. It was suggested that provision can be made that for every balata tree felled, a rubber tree should be planted in its place. This is a suggestion with merits, but supposing that such arrangements had been made with the several companies which have since failed, of what value to the colony would have been the rubber trees they planted? Granted that Mr. Daley's figures were correct, the question that calls for consideration is whether it would have been worth while to sacrifice our balata resources for a railway—the necessity of which would to that extent have diminished—and a very prospective rubber industry? On these terms this act of vandalism would, we think, have been wholly unjustified. We agree with THE INDIA RUBBER WORLD that the only way to arrive at truth in this matter is by experiment. It is urged that under existing conditions the trees die before they give that amount of balata that they would if they were at once felled. But to what extent that is the result—if it exists—of improper bleeding we have no means of knowing. It is certainly worth experimenting in the matter over a small area, but these experiments should be conducted by the Government, and should not be handed over to a private company, as apparently is being done in Surinam, to operate over 8,640 hectares. We shall watch the progress of events in Surinam with much interest."

Mr. Henry Daley, who was the prime mover in the former discussion, has replied to the *Chronicle* in the following terms: "Of course, if the colony wishes to refuse to support 'this act of vandalism,' the colony is the chief loser. It is certainly a very nice and patriotic feeling but likely to be expensive. I find generally though, that in the end business will override patriotism and also vandalism. It will be the same here. The Government will have to modify their balata regulations—within a short time—if they wish to derive revenues from the industry. My arguments in favor of allowing balata licensees to bleed trees as they think fit—with certain restrictions—are as follows: 1.—A considerably increased revenue could be secured, as licensees could well afford to pay higher royalties. 2.—Grants could be worked that are today impossible to work at a profit. 3.—Bleeders would earn more money; naturally, also the licensees. 4.—If the Surinam Government has followed its Venezuelan method of bleeding, they surely have fully considered the position. From my knowledge of the Dutch they seldom act on impulse. 5.—There is nothing to show today that trees will stand re-bleeding with advantage and it certainly seems improbable that a tree will survive a long number of years, if bled every five. 6.—There is little doubt that the equivalent amount of balata can be secured from a tree at one bleeding—as from the same tree in 30 years—under the existing regulations. 7.—The price of balata today is good and likely to remain so for the time being. What will be its value in 10 or 30 years? 8.—The demand for balata, unless the price goes down, is not likely to increase. Cables are not being laid nowadays, and low-grade rubbers treated can and do replace balata. 9.—That if the Government allowed the destroying of certain trees, it will take more men than there are today available, 30 years to bleed them, assuming there is only one balata tree to every 10 acres of the colony's area. 10.—Trees destroyed could be replaced—on plantations on the coast—by cocoanut or other trees, under some scheme of Government control, paid for by the increased royalty, which would yield in 20 or 30 years a very much finer revenue than balata is ever likely to give."

CATTLE RAISING PROPOSED IN BRITISH GUIANA.

Mr. C. L. Foot, an Englishman, with long experience in the cattle raising business in the Argentine, has applied to the British Guiana authorities for concessions of land, on which to establish ranches. Owing to the scarcity of cattle in Argentina he had determined on making a trial of British Guiana, which he considered excellently adapted for that purpose.

TWO MONTHS' BALATA EXPORTS.

British Guiana statistics from January 1 to February 27, 1913, show exports of 102,125 pounds, as compared with 23,483 pounds in the corresponding period of 1912.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

Some Rubber Planting Notes.

THE AKERS RUBBER COMMISSION.

ONE of the most interesting events in the recent history of the rubber industry was the appointment of the Akers Commission, which has now published its reports upon the rubber situation in the Orient and in the Amazon territory. The commission was divided into two sections as follows:

Orient Commission.—Mr. C. E. Akers, Dr. Jacques Huber, Mr. A. Ufenast and Mr. F. Lugones.

Amazon Commission.—Mr. C. E. Akers, Mr. H. C. Rendle and Mr. F. Lugones.

The objects of the Commission included the reporting upon the Amazon rubber industry, and the endeavor to find improved methods of administration, collection and preparation, with a view to enabling the Brazilian product to compete with that of the Orient. Another subject treated was the formulation of practical ideas for the colonization of waste lands. While the investigations of the Commission have thus been of an extended character, it had been appointed by a group of financiers closely connected with the port of Pará, in conjunction with the Booth Steamship Co., and other interests closely allied with the trade of the Amazon Valley. Its inquiries were first carried out in the East and then continued on the Amazon.

Among the subjects treated in the reports are the working of wild rubber properties, as well as tapping and preparation, and other points tending to facilitate comparison between Brazilian and Eastern methods.

The questions of labor supply and relative cost of production are likewise treated. The reports will be dealt with later in detail.

MABIRA FOREST (UGANDA) RUBBER COMPANY, LTD.

At the recent extraordinary general meeting of the above company, a resolution was carried for the creation of 30,000 new Participating Preference shares of £1 each. It was stated that a surplus of revenue over expenditure might be expected in 1915, and a satisfactory profit in 1916. By latest census published the company had about 700 acres planted in rubber, chiefly in *Hevea*.

SUNGEI MATANG RUBBER COMPANY, LTD.

In his report on his recent visit to the company's estate of 1,000 acres, in the State of Perak, Federated Malay States, Mr. F. O. Streeten, a member of the board of the company, commented on the fact that the older rubber was doing very well, while the younger was excellent for its age. About 700 acres are planted. Mr. Streetem adds that the treatment of Tamils is thoroughly understood, they being well and happy. In proof of the assertion, he mentions that it is no uncommon thing for those who have worked on the estate and then returned home, to come back again subsequently, bringing friends and relations with them. The hospital accommodation he found to be excellent, but, fortunately, in limited demand.

SMALL COMPANIES PAYING BEST.

Dealing with the successful record made by some of the smaller rubber companies, "Truth," of London, remarks that it is the small companies which have done the big things. The Cicely Company (established 1904) with £16,000 capital, brought 829 acres into bearing and paid for 1910 a dividend of 200 per cent. Pataling (established 1903) with a capital of only £22,000 has brought 1,467 acres to the tapping stage, paying for 1910 as much as 325 per cent.; while Selangor (established 1899) with 1,836 acres under cultivation, has a capital of only £30,000, and paid 375 per cent. in 1910.

While profits are lower than in the bonanza year 1910, the latest dividends of respectively 75, 175 and 187½ per cent. are still highly remunerative for the original investors in the three companies named.

Comparing past conditions with future prospects, the journal adds: "Companies formed in the early days, however, had the advantage of cheaper land, cheaper labor, and lower salaries; and estates were brought into bearing at a figure which would now be impracticable. No one expects to see the young producers reach the magnificent premiums attained by the older companies. The days of prosperity, however, have not yet departed from the rubber market, and if profits are to be smaller in the future, there is still a margin large enough to bear a gradual diminution without seriously cutting into the profits of progressive companies."

MANURING RUBBER.

Commenting upon the general question of manuring rubber, Mr. J. F. Naughton in a letter from Colombo, in the columns of the "Malay Mail," remarks that the subject is still more or less in a stage of discussion in the Federated Malay States, as compared with Ceylon, where manuring is almost universally recognized as a *sine qua non*.

With reference to comparisons which have been drawn between the manuring of wheat and rubber, he calls attention to the fact that wheat is a field crop and a direct product, whereas latex is only an indirect product obtained by the unnatural method of removing bark. The largest and healthiest trees naturally produce the most latex; the object of manuring rubber trees being the indirect increase of latex by the direct nourishment of the tree.

OFFICIAL REPORT ON BRITISH MALAYAN EXHIBIT AT NEW YORK RUBBER EXPOSITION.

In his official report on the above exhibit, Mr. Leonard Wray, I. S. O. (the commissioner to the recent New York Rubber Exposition for the Federated Malay States and the Straits Settlements) has described the preparations which led to the satisfactory result achieved on that occasion.

This section occupied about 3,500 square feet, being second in extent only to Brazil. Seventy-four plantation companies were represented, as against 34 at the London Exhibition of 1911; the total number of samples being 141, with an aggregate gross weight of 18,474 pounds. In quality, it is recorded that the rubber showed as great an advance over that sent to the 1911 exhibition as the latter did over that of the 1908 exhibition. This statement is confirmed by the fact that out of the ten awards in the prize competition of the Rubber Growers' Association, London, eight were taken by the Federated Malay States.

TO EXPLORE THE UPPER AMAZON.

The expedition organized under the auspices of the University of Pennsylvania, for the purpose of exploring the upper tributaries of the Amazon—an enterprise regarding which quite a little has appeared in the press during the last year—set sail from Philadelphia on the 19th of March in the "Pennsylvania," a yacht of 184 tons burden. The expedition will be gone about three years and is expected to penetrate to regions never before visited by white men.

The yacht is in command of Captain J. C. Rowen, U. S. N., retired, and the expedition is headed by Dr. William C. Larrabee, curator of the American section of the museum. His chief associates are Dr. Franklin B. Church, an authority on tropical medicine, and H. Sandy McNab, a traveler and scientist. The "Pennsylvania" carries a crew of eleven men.

THE BATAVIA EXHIBITION OF 1914.

POSTPONED from April, 1914, to the following September, the Batavia Rubber Exhibition will form the next link in the chain after the London display of June, 1914. By this arrangement of dates the visitors to the earlier exhibition can still take in the later one.

In the official program of the Batavia (Java) International Rubber Congress and Exhibition, attention is called to the fact that there are in the Netherlands East Indies 260,000 acres planted with rubber; the exports having amounted in 1911 to 2,249 tons. In addition to Dutch capital, the equivalent of about 92 millions of dollars has been invested by other nations in the Netherlands East Indies, this amount including about 75 millions British, 12 millions Belgian and four millions American. Germany is only represented by about three-quarters of a million.

As in the case of previous rubber exhibitions in other parts of the world, a Congress will be held, when it is expected that the views of well-known authorities on vital questions will throw light on many matters of consequence. One of the special features of the exhibition is—that being held in a rubber-producing country, rubber-yielding species will be planted in the exhibition grounds; while an opportunity will be afforded for visiting rubber estates in the vicinity of Batavia and in other parts of the East.

The Congress will be divided into eight sections, as follows: 1, Botany and Zoology; 2, Climate and Soil; 3, Culture and Crops; 4, Preparation, etc.; 5, Working Policy, etc.; 6, Synthetic Rubber; 7, Commerce; 8, Publications.

Prizes and diplomas will be offered by official and commercial organizations, the jury dealing with them being international in character. According to the latest announcement, the exhibition will be open from September 8 to October 10, 1914; the congress being scheduled to close on September 12, 1914.

A definite program of the congress will shortly be issued. Meanwhile, information can be obtained from the secretary of the committee, Dr. C. J. J. Van Hall, Buitzenborg, Java.

The Congress and Exhibition will be held under the patronage of the Prince Consort of the Netherlands and with the support of the Dutch Government. Applications for space should reach the secretary-general of the exhibition before November 1, 1913, mentioning floor or wall area required.

Among the principal objects of the exhibition will be to show how the culture and preparation of rubber are conducted in the principal rubber producing countries of the world. The necessary attention will also be given to wild rubber species.

Major General J. G. H. de Voogt is president of the executive council, the vice-president being Dr. W. B. Tromp de Haas, the well-known rubber expert.

SINGAPORE AS A DISTRIBUTING POINT FOR PLANTATION RUBBER.

The East Asiatic Co., Limited, of Singapore, has issued a circular to plantation companies, pointing out that the charges incurred by selling rubber in London represent 4⅜ per cent., of which 2¾ per cent. would be saved by selling in Singapore. The expenses of shipping and landing rubber from Singapore for the American market are estimated at 2⅛ per cent.

MANCHESTER (NORTH BORNEO) RUBBER, LIMITED.

According to the report of Mr. T. A. Ball, one of the directors of the above company, who recently visited the property, the rubber trees are everywhere looking healthy and strong. The best individual trees measured at three feet from the ground, 15½ to 16¾ inches, all tappable now at 2½ years' growth, which Mr. Ball considers very good indeed. By the last accounts about 1,700 acres were planted in rubber on the company's estates.

BRITISH MALAYA RUBBER PRODUCTION, 1906-1911.

OWING to the crop reports being furnished by various departments, the aggregate of the items of British Malayan rubber production is not always clear.

This point is, however, distinctly shown by the report of the Director of Agriculture of the Federated Malay States, which gives the returns of the four divisions comprised in the term "British Malaya":

ACREAGE UNDER RUBBER.

	1906.	1907.	1908.	1909.	1910.	1911.
Federated Malay States	85,579	126,235	168,048	196,953	245,774	352,974
Straits Settlements	11,341	42,866	50,121	57,587	60,568	80,629
Johore	2,310	10,126	20,944	33,344	43,516	74,975
Kelantan & Kedah	.....	.....	2,025	4,151	12,995	34,299
Total British Malaya	99,230	179,227	241,438	292,035	362,853	542,877

The preponderance of the Federated Malay States in the rubber production of British Malaya is shown by the official tables; those States representing about two-thirds of the total acreage under rubber and seven-eighths of the total yield.

Another feature of this return is the comparative table of acreage under rubber and yield of the four States which constitute the Federated Malay States. For 1911 the figures stand as follows:

	1911. Acreage Under Rubber.	1911. Yield. Pounds.
Selangor	145,222	11,438,966
Perak	124,681	6,041,762
Negri Sembilan	75,356	4,297,745
Pahang	7,715	31,144
Total of Federated Malay States	352,974	21,809,617

Thus, the State of Selangor produces the largest actual quantity of rubber, while the average per acre was approximately: Selangor, 79 pounds; Perak, 48 pounds; Negri Sembilan, 56 pounds; Pahang, 4 pounds. Selangor therefore leads under both heads. In connection with this total for 1911 of 21,809,617 pounds as yield of British Malaya it is of interest to note that the aggregate estimate of Malayan exports for 1912 is 44,588,807 pounds; thus showing an increase for last year exceeding 100 per cent. Official details on same basis as shown for 1911 will follow at a later date.

YIELDS OF RUBBER (POUNDS).

	1906.	1907.	1908.	1909.	1910.	1911.
Federated Malay States	861,772	1,990,754	3,192,710	6,083,493	12,617,383	21,809,617
Straits Settlements	25,560	105,621	145,580	330,381	1,045,577	2,137,644
Johore	47,724	182,495	201,632	327,635	664,352	905,218
Kelantan & Kedah	.....	.....	.....	.....	41,551	51,564
Total British Malaya	935,056	2,278,870	3,539,922	6,741,509	14,368,863	24,904,043

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED FEBRUARY 4, 1913.

NO. 1,051,939. Resilient tire. P. F. Wobst, Milwaukee, Wis.
1,051,975. Tire fastener. E. G. Watrous, Chicago, Ill.
1,051,987. Process of treating rubber and product of the same.
1,052,009. Cushioned automobile wheel. W. F. Nelson, Exira, Iowa.
1,052,064. Vehicle wheel. E. F. Krell, Detroit, Mich.
1,052,088. Combined hose coupling and faucet. L. C. Prettyman, Los Angeles, Cal.
1,052,103. Hose clamp. W. J. Tuttle, Albany, Wyo.
1,052,106. Hose. F. D. Voorhees, Montclair, N. J.
1,052,129. Tire fastener. F. M. Carhart, Sea Cliff, and A. Van de Water, Glen Cove, N. Y.
1,052,143. Rubber stamp. E. L. Hamilton, Lumberton, N. C.
1,052,270. Wheel. L. H. Perlman, New York.
1,052,289. Milk bottle stopper. T. B. Sluby, Canonsburg, Pa.
1,052,290. Wheel. B. Smartt, Indianapolis, Ind.
1,052,350. Spring wheel. V. E. Lane, Brooklyn, N. Y.
1,052,358. Cushion spring wheel. H. J. Marks, Toowoomba, Queensland, Australia.
1,052,391. Sediment tester. T. L. Valerius and O. Larsen, Fort Atkinson, Wis., assignors to Creamery Package Mfg. Co., of Illinois.
1,052,422. Inclosed core for tires. J. M. Miller, Washington, D. C.
1,052,430. Vulcanizing distinct parts or surfaces of rubber. O. Walter, Hanover, Germany.

Designs.

43,495. Wheel tire. J. Christy, Akron, Ohio.
43,499. Rubber cushion. W. A. Force, New York.

Trade Marks.

55,728. New York Belting and Packing Co., Ltd., assignor to New York Belting and Packing Co., N. Y. The trade mark *Great Seal*, with company's name and dates of foundation and incorporation in circle.
67,188. Chicago Belting Co., Chicago, Ill. The word *Reliance*. For leather belting.

ISSUED FEBRUARY 11, 1913.

1,052,508. Rotable heel lift. W. J. Newland, Omaha, Neb.
1,052,560. Tread band for tires of motor vehicles. J. C. Berry, Harrow, England
1,052,565. Spring wheel. R. M. Burgess, Columbia, Mo.
1,052,570. Spring spoke. W. H. Clark, West Burlington, N. Y.
1,052,572. Rim brace and tire clamp. J. P. Corbett, Fayette, Ala.
1,052,576. Spring cushion and weather strip. J. F. Fauner, Newark, N. J.
1,052,757. Vehicle tire. J. T. Shea, Glen Cove, N. Y.
1,052,765. Man's garment. J. C. Strauss, St. Louis, Mo.
1,052,801. Emergency tire for automobiles. S. Davidson, Detroit, Mich.
1,052,861. Steam hose. C. A. Swanson and A. B. Brooke, Hancock, Md.
1,052,873. Protector for pneumatic tires. C. B. Woodworth, Niagara Falls, N. Y.
1,052,936. Belt fastener. J. Mathews, Plymouth, Pa.
1,053,101. Vehicle tire. F. A. Magowan, N. Y.
1,053,141. Rim and tire for vehicle wheels. J. A. Cooper, Chattanooga, Tenn.

Designs.

43,556. Rubber bathing cap. R. Parker, New York, assignor to Parker, Stearns & Co., Brooklyn, N. Y.

Trade Marks.

59,107. The Republic Rubber Co., Youngstown, Ohio. Illustration of portion of inner tube.

ISSUED FEBRUARY 18, 1913.

1,053,142. Tire tightener. J. Alcorn, Mecca, Ind.
1,053,155. Vacuum creating apparatus. C. G. Campbell and M. Benbrook, Milwaukee, Wis., assignors to Creamery Package Mfg. Co., Chicago, Ill.
1,053,180. Typewriter roller. A. G. Hug, Chicago, Ill.
1,053,238. Tire. G. A. Stewart and H. E. Goodell, Ridley Park, Pa.
1,053,299. Brake liner fabric and process of making same. E. B. Knowles, Bridgeport, Conn., assignor to C. L. Hill, Lancaster, Pa.
1,053,304. Pneumatic tool. H. E. Le Gendre, Creskill, N. J., assignor to E. W. Bliss Co., Brooklyn, N. Y.
1,053,332. Vehicle wheel. A. R. Weaver, Batesville, Ark.
1,053,346. Wheel rim for pneumatic tires. E. K. Baker, assignor to Universal Rim Co., both of Chicago, Ill.
1,053,347. Wheel rim for pneumatic tires. E. K. Baker, assignor to Universal Rim Co., both of Chicago, Ill.
1,053,402. Spring wheel. E. B. Keemer, Washington, D. C.
1,053,404. Machine for preparing cores for re-use in manufacturing pneumatic tire shoes. F. L. Killian, assignor to F. R. Ormsby, both of Akron, Ohio.
1,053,408. Machine for covering circular objects. C. J. Landin, Boston, assignor to Boston Woven Hose & Rubber Co., Cambridge, Mass.
1,053,427. Acetylene gas apparatus. A. Moser, Hickman, Neb.
1,053,439. Process for treating worn or waste rubber or the like for the utilization thereof. W. E. W. Richards, assignor to The Bourn Rubber Co., Ltd., both of London.
1,053,504. Anti-skidding device for tires. M. C. Harris, Philadelphia, Pa.
1,053,525. Pump. J. Meklensek, San Diego, Cal.
1,053,636. Vehicle wheel. C. J. Ohlsson, New York.
1,053,707. Spring tire for vehicle wheels. S. J. Casey, Keeseville, N. Y.
1,053,723. Resilient wheel. C. D. Galvin, Merchantville, N. J.
1,053,778. Wheel. G. L. Bourquin, Sellersville, Pa.
1,053,821. Resilient tire. R. L. Jenkins, Richmond, Va.
1,053,847. Tread band for pneumatic tire wheels. J. McLeod, St. Kilda, Victoria, Australia.
1,053,852. Cushion wheel. A. Moon, Fallon, Nev.
1,053,879. Self-filling fountain pen. J. L. Schnell, Arlington, N. J.
1,053,889. Vehicle wheel. J. F. Starbuck, Philadelphia, Pa.
1,053,910. Locking device for train pipe couplings. W. A. Greenlaw, Melrose, Mass., assignor to The Greenlaw Mfg. Co., Boston.
1,053,933. Rubber-lined fabric hose. B. L. Stowe, Jersey City, N. J.
1,053,953. Detachable tire tread. A. Ascheri, Puteaux, France.

ISSUED FEBRUARY 25, 1913.

1,054,060. Soldering apparatus. W. Ulbrich, Leipzig, Germany.
1,054,171. Tire holder. Henry Buermann, Newark, N. J.
1,054,245. Detachable rubber heel. J. E. Shell, Lenoir, N. C.
1,054,312. Sectional pneumatic tire. M. P. Prince, Cambridge, and C. M. Bernheimer, Newburyport, Mass.
1,054,444. Resilient tire for wheels. E. L. A. Olivier, Paris, France.
1,054,501. Spring wheel. S. D. Brooks, Oneonta, N. Y.
1,054,504. Means for tire inflation. L. Burgraff, Jr., Mason City, Iowa.
1,054,516. Resilient tire for the wheels of vehicles. M. G. C. Dodwell, Wellington, New Zealand.
1,054,519. Wearing apparel. M. M. Dryfoos, New York.

Trade Marks.

61,738. The J. F. & W. H. Warren Co., Worcester, Mass. The trade mark *B and F*. Leather belting.
59,847. Voorhees Rubber Mfg. Co., Jersey City, N. J. The word *"Ideal."* Rubber boots, etc.
63,769. The Philip Carey Mfg. Co., Lockland, Ohio. The words *Est. 1873 Carey* in black and white diamond. Packings, etc.
64,403. F. Goetze, New Brunswick, N. J. The words *Goetze Devo Gaskets* over illustration of gasket. Gaskets.
66,556. Morley Bros., Saginaw, Mich. The word *Wedgeway*. Automobile tires and rubber hose.
66,645. Mishawaka Woolen Mfg. Co., Mishawaka, Ind. The word *Vac*. Rubber boots and shoes.
66,858. Fort Wayne Oil and Supply Co., Fort Wayne, Ind. The word *Parotex*. Canvas stitched belting.
67,354. Hood Rubber Co., Watertown, Mass. Illustration of a rubber shoe, boots, shoes, etc.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, FEBRUARY 12, 1913.]

23,109 (1911). Spring wheels with rubber cushions. G. S. Ogilvie, Sizewell Hall, near Leiston, Suffolk.
23,116 (1911). Rubber couplings for vehicle wheels. E. Schneider, Le Creusot, Saone-et-Loire, France.
23,133 (1911). Improvements in solid and pneumatic tires. F. Baptiste, 36 Cannon street, Birmingham.
23,210 (1911). India-rubber substitutes containing soya-oil. J. W. Butler, 29 Glenshiel Road, Eltham, Kent.
23,349 (1911). Protecting rim during painting of tires. J. W. Harrison, Cranford, Layters Way, Gerrards Cross, Buckinghamshire.
23,419 (1911). Tire attachments to rims. C. S. Challiner, 18 Park Range, and J. A. Challiner, The Glen, Anson Road—both in Victoria Park, Manchester.
23,475 (1911). Pneumatic tire with solid rubber tread band. D. Strang, Esk street, Invercargill, New Zealand.
23,593 (1911). Round links in tread bands. C. Mercanton, Clarens, Vaud, Switzerland.
23,611 (1911). Spare wheel cover. Dunlop Pneumatic Tyre Co., and H. J. Dunn, Alma street, Coventry.
23,630 (1911). Rubber substitutes containing gelatinous solvents. J. Stockhausen, 105 Fischelnerstrasse, Crefeld, Germany.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, FEBRUARY 19, 1913.]

23,700 (1911). Leather tread bands for tires. H. Roths, and G. Schwyzer, Mannedorf, Zurich, Switzerland.
23,722 (1911). Improvements in pneumatic tires. H. A. Fleuss, Dunston Lodge, Thatcham, Berkshire, and R. H. Davis, 187 Westminster Bridge Road, London.
23,723 (1911). Improvements in coagulation of latex. J. Y. Johnson, 47 Lincoln's Inn Fields, London.
23,738 (1911). Tire repair outfits. M. J. Schulte, Hillcrest, Kenilworth, Warwickshire.
*23,741 (1911). Detachable rim attachments. J. H. Wagenhorst, Akron, Ohio, U. S. A.
*23,838 (1911). Improvements in solid tires. G. T. Doty, 3625 21st street, and J. D. Show, 1609 Race street—both in Philadelphia, Pa., U. S. A.

24,074 (1911). Stair treads. D. Baxter, Inveresk, Compton avenue, Cathcart, and R. L. Baxter, 150 Bothwell street, Glasgow.

24,117 (1911). Packing for gas pipe joints. L. Schomburg, 53 Kaiserstrasse, Gelsenkirchen, Germany.

24,124 (1911). Plastic composition including rubber or gutta-percha. J. W. Aylsworth, 223 Midland avenue, East Orange, N. J.

24,156 (1911). Stocking suspenders. C. Nicholson, The Leylands, Hatfield, near Doncaster.

24,196 (1911). Spring wheels with pneumatic cushions. E. Allen, 78 Salop street, Penarth, South Wales.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, FEBRUARY 26, 1912.]

24,313 (1911). Mud-guards for vehicles. C. H. Nichols, 40 Stratford Road, Wolverton, Buckinghamshire.

24,412 (1911). Rubber tubes for lubricators. K. Rotherham, 27 Spon street, and W. Johnson, 39 Park Road—both in Coventry.

24,429 (1911). Use of rubber buffers in hanging pictures. A. Hailey, 4 The Mall, and H. A. Green, 2 The Mall—both in Church End, Finchley, London.

24,437 (1911). Vulcanized fabric composed of leather and rubber. S. F. Connolly, 101 Chalton street, Euston Road, London.

24,484 (1911). Safety stair-treads. Safety Tread Syndicate, Ltd., 15 Barbican, and E. S. Higgins, 21 Cornfield Grove, Balham, both in London.

24,496 (1911). Rubber in fabric-stretching rolls. S. Hough, Ash street, South Shore, Blackpool.

24,549 (1911). Decomposition of terpene in production of isoprene. P. A. Newton, 6 Breams Buildings, Chancery Lane, London.

24,615 (1911). Rubber shock absorbers for flying machines. A. V. Roe, 47 Rusholme Road, Putney, London.

*24,752 (1911). Inflation and deflation of motor tires. L. Burgraff, 1437 Third avenue, Mason City, Iowa, U. S. A.

24,758 (1911). Closing punctures in tires. F. H. Michelsen, E. W. and H. P. Hudd, Burnet street, Hatfield, Pretoria, Transvaal.

24,781 (1911). Rubber rings in toy pistols. G. Schrödel, 18 Maiachstrasse, Nürnberg, Germany.

24,878 (1911). Construction of air tubes. W. R. Bourne, 12 South street, Ponder's End, and G. Welch, 35 Warwick Road, Edmonton, both in

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

446,541 (July 26, 1912), MacQueen. Elastic vehicle tires.

446,557 (July 26). C. Michot. Improvements in apparatus for vulcanizing repaired tires.

446,598 (July 27). Farbenfabriken, vorm. F. Bayer & Co., Manufacture of a product resembling vulcanized rubber.

446,600 (July 27). Badische Anilin und Soda Fabrik. Manufacture of products resembling rubber.

446,602 (July 27). G. Roumier. Pneumatic tire.

446,659 (July 30). U. Sarrat and E. Sarrat. Separation of air chambers of pneumatic vehicle wheels.

446,670 (July 30). L. Steurs. Leather cut and incrusted with rubber, for use in footwear, soles, heels, etc.

446,702 (July 31). Harvey, Frost & Co., Ltd. Improvements in electric heating appliances and particularly in vulcanizers.

446,724 (July 31). L. Tervièire. Elastic tires for automobile and other vehicles.

446,749 (August 1). J. E. Johnson and F. G. Mason. Protective cover for pneumatic tires and its process of manufacture.

446,758 (August 1). R. Trautwein. System of combined solid and pneumatic tires for automobiles and other vehicles.

446,828 (August 2). R. Muller. Protective cover for solid and pneumatic tires.

446,851 (August 2). C. Schragin. "Ventilating" tire, with protective cover for automobiles.

446,742 (August 1). M. Kochnitzsky and A. Field. Process for extracting resin from crude rubber.

446,942 (August 6). G. E. Starr. Pneumatic tire for automobiles and other vehicles.

447,024 (October 16, 1911). G. Kantor. Pneumatic vehicle wheel.

447,025 (October 16, 1911). G. Kantor. Automatic pneumatic vehicle wheel.

447,093 (August 9, 1912). R. Angelle. Mud guards for vehicle wheels.

447,142 (August 12). E. Junghaus. Automobile tire.

447,166 (August 13). E. H. Koken. Improvements in elastic vehicle tires.

447,245 (August 16). L. J. G. Collet. Central pneumatic wheel.

447,247 (August 16). F. Mabraux. Mud guards for automobiles, autobuses and similar vehicles.

447,344 (August 17). P. Lagasse. Protection for pneumatic tires.

447,421 (August 20). Gummiwerk Solle, Munich. Pneumatic tire with mica protection.

447,428 (August 21). W. Langmuir. Continuous tire for rubbered wheels.

447,411 (October 26, 1911). L. Velasquez. Process for making artificial rubber.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

257,548 (January 3, 1912). Pneumatic truck tires removable while inflated. Gustav Fischer, Stormstrasse 4, Berlin-Westend.

257,875 (September 17, 1911). Manufacture of leather cloths, waterproof fabrics, etc. Albert Reimann, Andernach A. R.

257,813 (March 24, 1911). Process for preventing artificial rubber from becoming viscous or resinous. Farbenfabriken, vorm, F. Bayer & Co., Leverkusen.

258,151 (April 7, 1910). Products resembling vulcanized rubber. Farbenfabriken, vorm, F. Bayer & Co., Leverkusen.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

250,713 (1913). Amalgamation and agglomeration with rubber of granulated or powdered carborundum. C. Leclercq and M. Bertholomé, Liege.

250,569 (1913). Process for preserving the elasticity of rubber objects. C. Bayer, Alteburgerstrasse 57, Cologne.

250,385 (1913). Coagulation of gelatine and like substances by cold. M. Find, head of 5th st., Camden, N. J., U. S. A.

252,244 (1913). Utilization of rubber waste. O. A. Wheeler, E. D. Loewenthal and B. Loewenthal, 17 North La Salle st., Chicago.

249,979 (1913). Manufacture from animal substances of an elastic product analogous to rubber. Naamlooze Vennootschap Chemische Industrie, Amsterdam.

252,274 (1913). Manufacture of waterproof products. J. H. W. Daw and the Azulay Syndicate, Limited, 8 Laurence Pountney Hill, London.

251,190 (1913). Production of elastic composition. H. Haulot, avenue Louise 49, Brussels.

251,275 (1913). Manufacture of plastic elastic and non-hygroscopic masses. W. Plinatus, Zuffenhausen, near Stuttgart.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of the values of exports of manufactures of india-rubber and gutta-percha for the month of December, 1912, and for the first eleven months of five calendar years:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
December, 1912...	$187,105	$113,067	$578,552	$878,724
January-November.	2,342,738	1,245,155	7,305,234	10,893,127
Total, 1912.....	$2,529,843	$1,358,222	$7,883,786	$11,771,851
Total, 1911.....	2,276,511	1,686,092	7,140,140	11,102,743
Total, 1910.....	2,056,944	2,266,137	5,681,486	10,004,567
Total, 1909.....	1,800,300	1,653,466	4,413,626	7,867,392
Total, 1908.....	1,256,490	1,329,170	3,580,685	6,166,345

The above heading, "All Other Rubber," for the month of December, 1912, and for the first eleven months of two calendar years, include the following details relating to tires:

MONTHS.	For Automobile.	All Other.	TOTAL.
December, 1912.....*values*	$187,434	$64,053	$251,484
January-November	3,034,699	544,477	3,579,176
Total, 1912.....	3,222,133	608,530	3,830,663
Total, 1911.....	2,458,177	561,330	3,019,507

AN ASBESTOS MERGER.

The Northwestern Asbestos Mills and the International Asbestos Mills and Power Companies are said to have instructed their directors to proceed with plans for the merging of the two companies into one corporation, with a capital stock of $8,000,000.

1,500,000 BALES OF COTTON FOR TIRES.

Few people have any conception of the tremendous consumption of cotton in the great tire industry in this country. The Government Report shows that last year automobile tires required one and a half million bales of cotton—and, of course, cotton of the very highest grade. It is not surprising, therefore, that the price of cotton remains at a high level.

Report of the Crude Rubber Market.

THE most prominent feature of the London market for fine Pará during the month has been the relatively small extent of fluctuation. In the closing days of February, the price recorded on the 25th of 4*s.* 0½*d.* had slightly dropped, the month of March starting at 4*s.* and touching 3*s.* 11*d.* on March 3, which has practically been about the basis since then, with some fractional changes, and closing on the 26th at 3*s.* 10¾*d.* Plantation rubber pale crepe has been at almost identical prices with fine Pará during the month, the figure on the 26th being 3*s.* 10¼*d.*, as compared with 3*s.* 10¾*d.* for fine Pará. Prices have been to some extent supported by the absence of pressure to sell.

On March 11 there were 900 tons plantation offered by auction in London, prices realized showing a decline of ½*d.* to ¾*d.* as compared with those of the previous auction, a fortnight earlier.

Owing to the approaching Easter holidays, there was a small sale of 350 tons on March 18. Notwithstanding the absence of American purchases (owing to the strike), the buying power of the market proved fully equal to the quantity offered, which sold at prices slightly easier than those of the previous week.

In New York the continuance of the Akron strike has continued to depress the market, which is, however, expected to recover with the settlement reported to have been made for March 31. Manufacturers have, as a rule, abstained from purchases, preferring to make further inroads upon their stocks before replenishing them.

Leading plants in the above-named city claim that they have had but little difficulty in working their plants at full capacity during the strike. This estimate is, however, not regarded as general, the proportion of operation to capacity being considered to have averaged 50 per cent. Large tire interests at Akron are reported to have enough stock of crude rubber to last through the summer months.

At the Rotterdam sale of the 14th, the Congos were withdrawn, while the plantation rubber fetched market rates.

The monthly Antwerp auction on the 19th of March, resulted in the sale of the 225 tons of Congos and the 75 tons Plantations, at an average of 3 per cent. below valuations.

In the Amsterdam sale of March 12, were included 33 tons *Hevea* and 15 tons *Ficus*, which sold respectively at 2½ per cent. and 3½ per cent. below valuations.

Hamburg has shown a somewhat better feeling during March. Quotations of March 14 equaled: South Cameroon, 63¼c.; Mollendo Pará, 92½c.; Prima Red Rio Nunez Niggers, 89; Conaky Niggers, 85c.; Maniçoba Crepe, 85c.

With reference to the question of the visible supply of rubber, it is noted with interest that the stock at the end of February has been stated to be 6,960 tons Parás and 2,010 tons Caucho, against 7,930 and 1,700 tons respectively at the end of February, 1912.

New York Quotations.

Following are the quotations at New York for Pará grades, one year ago, one month ago, March 29—the current dates:

Para.	April 1,'12.	Mar. 1,'13.	Mar. 29,'13.
Islands, fine new	117@118	91 @ 92	89@90
Islands, fine, old	119@120	.....	.....
Upriver, fine, new	122@122	96 @ 97	92@93
Upriver, fine, old	124@125	.....	.....
Islands, coarse, new	67@ 68	46½@ 47	43@44
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	98½@ 99	71 @ 72	66@67
Upriver, coarse, old	.....	.....	.....
Cametà	72@ 73	48 @ 49	48@49
Caucho (Peruvian) ball	98@ 99	71½@ 72½	70@71
Caucho (Peruvian) sheet	.....	.....	.....
Plantation Ceylons.			
Fine smoked sheet	139@140	101 @102	97
Fine pale crepe	138@139	97 @ 98	95
Fine sheets and biscuits	136@137	96 @ 97	92
Centrals.			
Esmeralda, sausage	97@ 98	71 @ 72	68
Guayaquil, strip	.....	.....	..
Nicaragua, scrap	96@ 97	69 @ 70	..
Panama	.....	.....	..
Mexican plantation, sheet	95@ 96	.....	..
Mexican, scrap	.....	.....	..
Mexican, slab	.....	.....	..
Mangabeira, sheet	67@ 68	.....	..
Guayule	69@ 70	.....	64
Balata, sheet	90@ 91	82 @ 83	..
Balata, block	62@ 63	52 @ 53	..
African.			
Lopori, ball, prime	122@123	.....	..
Lopori, strip, prime	.....	.....	..
Aruwimi	.....	.....	80
Upper Congo, ball red	.....	97 @ 98	90
Ikelemba	.....	.....	..
Sierra Leone, 1st quality	109@110	.....	..
Massai, red	111@112	88 @ 89	88
Soudan Niggers	.....	.....	..
Cameroon, ball	91@ 92	68 @ 69	63½
Benguela	78@ 79	65 @ 66	63
Madagascar, pinky	.....	.....	..
Accra, flake	28@ 29	25 @ 26	25
East Indian.			
Assam	.....	85 @ 86	83
Pontianak	6¼@ ..	8 @ 8½	8
Borneo	.....	.....	..

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During March the money market has continued quite stringent, with very little demand for paper, the best rubber names ruling at 5½ per cent. @ 6 per cent., principally the latter, and those not so well known 6¼ per cent. @ 6½ per cent., with some as high as 7 per cent."

New York Prices for February (New Rubber).

	1913.	1912.	1911.
Upriver, fine	$.96@1.03	$1.07@1.11	$1.28@1.68
Upriver, coarse	.72@ .78	.92@ .94	.98@1.20
Islands, fine	.92@ .97	1.05@1.08	1.15@1.56
Islands, coarse	.47@ .51	.62@ .65	.65@ .90
Cametá	.48@ .51	.65@ .67	.68@ .95

Rubber Scrap Prices.

Late New York Quotations.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	March 28, '13.
Old rubber boots and shoes—domestic	10⅝@10¾
Old rubber boots and shoes—foreign	9½@ 9⅝
Pneumatic bicycle tires	6¼@ 6⅜
Automobile tires	10½@10⅝
Solid rubber wagon and carriage tires	9¼@ 9½
White trimmed rubber	11 @11½
Heavy black rubber	4¼@ 5
Air brake hose	6 @ 6½
Garden hose	1⅛@ 1½
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾

STATISTICS PARA INDIA RUBBER (IN TONS).

(Including Caucho).

STATISTICS FOR THE MONTH OF FEBRUARY.

	Pará.	Caucho.		1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	3,790	1,190	=	4,980	against	4,840	5,790	4,770
Shipments to Liverpool	1,720	690	=	2,410	"	1,990	2,290	2,180
Shipments to Continental Ports	250	120	=	370	"	500	330	330
Shipments to America	1,570	220	=	1,790	"	2,640	1,500	3,000
American Imports	2,040	280	=	2,320	"	2,670	1,460	2,390
American Deliveries	1,620	290	=	1,910	"	2,790	1,520	2,380
Liverpool Imports	1,356	673	=	2,029	"	1,745	1,586	1,885
Liverpool Deliveries	1,046	393	=	1,439	"	1,625	1,385	1,645
Continental Imports	310	80	=	390	"	520	350	360
Continental Deliveries	310	80	=	390	"	540	320	360

VISIBLE SUPPLY—1st March, 1913.

	1913. Pará.	1913. Caucho.	1912.	1911.	1910.
Stock in England, Pará, 1st hands	585	.....	1,600	2,156	333
Pará, 2nd hands	115	.....		364	180
Caucho	...	480	280	490	307
Stock in Pará, 1st hands	720	290	290	790	60
2nd hands	680	100	910	440	450
Syndicate	810	.....	2,240	2,450	.....
Stock in America	710	110	130	160	150
Stock on Continent	10	10	60	100	20
Afloat—Europe	1,380	560	1,680	1,700	1,710
Afloat—America	660	110	690	590	2,190
	5,670	1,660			
Total Visible Supply, including Caucho.	7,330		7,880	9,240	5,400

CROP STATISTICS—30th June, 1912, 28th February, 1913.

		Pará.	Caucho.	1912/13.	1911/12.	1910/11.	1909/10.
Pará Receipts	1912/13	24,200	4,970	29,170	25,710	25,700	26,970
	1911/12	22,590	3,120				
Pará Shipments to Europe		12,110	3,440	15,550	13,320	12,690	12,180
Pará Shipments to America		12,380	1,800	14,180	13,470	9,840	14,540
England Landings, net				10,784	9,117	8,961	9,021
England Deliveries, net				10,974	12,337	9,239	9,323
America Landings, net				13,740	15,175	9,670	12,810
America Deliveries, net				13,090	14,945	9,650	13,450
Continental Imports, net				2,990	2,250	2,150	1,600
Continental Deliveries, net				3,070	2,300	2,100	1,610

POSITION—1st March, 1913.

Increase in Receipts during February, 1913, against February, 1912	140
Increase in Receipts—Crop, July/February, 1912/13, against 1911/12	3,460
Decrease in Deliveries—Crop, July/February, 1912/13, England and Continent, against 1911/12	593
Decrease in Deliveries—Crop, July/February, 1912/13, America, against 1911/12	1,855
Decrease in Visible Supply Pará Grades, against 1st March last year	550
Decrease in Stock, England, February 28th, 1913, against February 29th, 1912	700

WM. WRIGHT & CO.

Liverpool, 4th March, 1913.

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1912.

[In Shillings and Pence Per Pound.]

July 5, 1912	4/9	November 15	4/5¼
July 12	4/10	November 22	4/5¼
July 19	4/10	November 29	4/5½
July 26	4/11¾	December 6	4/7
August 2	4/11	December 13	4/7
August 9	5/0½	December 20	4/6½
August 16	5/0½	December 27	4/7½
August 23	5/2	January 3, 1913	4/7¼
August 30	5/1¾	January 10	4/6½
September 6	4/11½	January 17	4/6½
September 13	4/9½	January 24	4/5¼
September 20	4/8	January 31	4/4
September 27	4/7	February 7	4/2¾
October 4	4/7	February 14	4/3
October 11	4/7	February 21	4/0½
October 18	4/6½	February 28	4/0½
October 25	4/6	March 7	3/10¾
November 1	4/4½	March 14	3/11¼
November 8	4/5	March 20	3/11

Liverpool.

William Wright & Co. report [March 3]:

Fine Pará.—Prices remained fairly steady during the first half of the month, but the financial difficulties of an important American house caused a further decline in values, and we close fully 4*d.* per pound lower on the month, with a dull demand and an easy tendency. Closing value: Upriver, spot, 4*s.* [97 cents]; Islands, 3*s.* 11*d.* [95 cents]. Receipts continue ample, but the increase this month is in caucho, rubber being 130 tons less. Total receipts 4,980 tons, including 1,190 tons caucho, against 5,130 tons last month, and 4,840 tons last year, bringing the crop up to date to 29,170 tons, against 25,710 tons last year, showing an increase of 1,610 tons in rubber and 1,850 tons in caucho.

Amsterdam.

Joosten & Janssen report [March 12]:

The result of today's sale, though very irregular, was above expectations, considering the unfavorable position of the market.

Rotterdam.

Havelaar & De Vries report [March 17]:

The sale of 14th included 77 tons Congo, which were mostly bought in, while the 10 tons *Hevea* were sold at market prices.

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

February 26.—By the steamer *Clement*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	250,600	40,200	179,500	18,300=	488,600
New York Commercial Co	169,000	35,900	44,200	11,100=	260,200
General Rubber Co	58,400	9,600	47,100	2,100=	117,200
Meyer & Brown	96,000	19,600	55,900	2,300=	173,800
Hagemeyer & Brunn	13,200	1,800	11,900	.....=	26,900
De Lagotellerie & Co	.....	.....	7,900	.....=	7,900
Henderson & Korn	107,900	25,200	12,500	15,800=	161,400
H. A. Astlett & Co	8,900	10,400	7,300	.....=	26,600
American Export Co	.....	.....	18,500	2,200=	20,700
	704,000	142,700	384,800	51,800=	1,283,300
MANAOS.					
Arnold & Zeiss	76,200	4,400	27,300	.....=	107,900
New York Commercial Co	195,200	72,800	72,900	20,600=	361,500
Ed. Maurer	11,200	3,400	1,200	55,000=	70,800
General Rubber Co	.....	.....	18,700	.....=	18,700
Meyer & Brown	.....	.....	.....	21,100=	21,100
Henderson & Korn	43,300	11,100	2,900	68,400=	125,700
Robinson & Co	46,000	1,000	17,500	5,800=	70,300
American Export Co	22,200	.....	.....	.....=	22,200
	394,100	92,700	140,500	170,900=	798,200
Total	1,098,100	235,400	525,300	222,700=	2,081,500

March 6.—By the steamer *Pancras* from Pará and Manáos:

Arnold & Zeiss	57,100	.....	160,000	35,400=	252,500
General Rubber Co	133,300	10,000	92,400	2,800=	238,500
Meyer & Brown	94,200	8,700	33,100	.....=	136,000
Henderson & Korn	127,100	37,600	85,300	15,700=	265,700
G. Amsinck & Co	2,400	1,000	2,200	.....=	5,600
Lazard Freres	19,000	.....	900	300=	20,200
	433,100	57,300	373,900	54,200=	918,500
MANAOS.					
New York Commercial Co	134,600	43,300	33,400	21,100=	232,400
Arnold & Zeiss	101,500	2,400	34,100	20,700=	158,700
General Rubber Co	14,800	.....	9,900	.....=	24,700
Meyer & Brown	.....	.....	.....	52,500=	52,500
Henderson & Korn	33,600	3,400	500	46,600=	84,100
Robinson & Co	19,600	12,600	29,600	16,400=	78,200
Ed. Maurer	6,700	5,400	5,000	3,600=	20,700
	310,800	67,100	112,500	160,900=	651,300
Total	743,900	124,400	486,400	215,100=	1,569,800

March 11.—By the steamer *Napo* from Iquitos:

H. A. Astlett & Co	1,100	.....	1,400	13,200=	15,700

March 17.—By the steamer *Basil* from Pará and Manáos:

Arnold & Zeiss	75,500	.....	52,400	40,100=	168,000
General Rubber Co	2,000	.....	15,400	800=	18,200
Meyer & Brown	19,300	4,600	34,700	.....=	58,600
Henderson & Korn	40,300	8,600	57,800	1,700=	108,400
Ed. Maurer	41,300	.....	.....	.....=	41,300
G. Amsinck & Co	6,100	400	3,300	.....=	9,800
	184,500	13,600	163,600	42,600=	404,300
MANAOS.					
Arnold & Zeiss	87,200	300	24,200	200=	111,900
General Rubber Co	43,000	.....	19,100	300=	62,400
Meyer & Brown	.....	.....	.....	50,300=	50,300
Ed. Maurer	1,300	18,700	1,300	1,800=	23,100
American Export Co	22,800	.....	.....	.....=	22,800
Henderson & Korn	74,300	29,000	27,800	800=	131,900
Robinson & Co	59,900	.....	20,300	14,200=	94,400
	288,500	48,000	92,700	67,600=	496,800
Total	473,000	61,600	256,300	110,200=	901,100

PARA RUBBER VIA EUROPE.

		Pounds.
February 24.—By the *Advance*=Colon:		
W. R. Grace & Co. (Fine)	11,500	
F. Rosenstern & Co. (Fine)	7,000	18,500
February 24.—By the *Carmania*=Liverpool:		
N. Y. Commercial Co. (Fine)	11,500	
Raw Products Co. (Fine)	2,000	
Rubber Trading Co. (Fine)	11,500	25,000
February 28.—By the *Victorian*=Liverpool:		
James T. Johnstone (Fine)		9,000
March 3.—By the *Celtic*=Liverpool:		
Wallace L. Gough (Fine)	11,500	
Arnold & Zeiss (Fine)	7,000	
General Rubber Co. (Fine)	4,000	
General Rubber Co. (Coarse)	7,000	29,500
March 12.—By the *Kroonland*=Antwerp:		
Various (Fine)		10,000
March 15.—By the *Bovic*=Liverpool:		
General Rubber Co. (Fine)	5,000	
Various (Fine)	33,500	38,500
March 15.—By the *Chicago*=Havre:		
Arnold & Zeiss (Fine)		11,500
March 17.—By the *Baltic*=Liverpool:		
N. Y. Commercial Co. (Fine)		11,200

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

February 24.—By the *Metapan*=Colombia:		
R. Del Castillo & Co.	700	
Heilbron Wolff & Co.	300	1,000
February 24.—By the *Morro Castle*=Mexican Ports:		
Meyer & Brown	1,000	
Herman Kluge	4,000	
E. Steiger & Co.	1,000	
General Export Commission Co.	1,800	
Mecke & Co.	500	8,300
February 24.—By the *Advance*=Colon:		
G. Amsinck & Co.	4,000	
Wessels, Kulenkampff & Co.	1,000	
Charles E. Griffin	1,200	
United Export Co.	1,000	7,200
February 24.—By the *Carmania*=Liverpool:		
Various		22,500
February 24.—By the *President Grant*=Hamburg:		
Meyer & Brown		7,300
February 24.—By *El Dia*=Galveston:		
Continental-Mexican Rubber Co.		*52,000
February 24.—By the *Allemania*=Colombia:		
Kunhardt & Co.	600	
Maitland, Coppell & Co.	4,000	
A. Helde	3,000	7,600
February 25.—By the *Tivives*=Port Simon:		
New York Commercial Co.		4,500
February 26.—By the *Antilla*=Tampico:		
Arnold & Zeiss	*33,000	
Continental-Mexican Rubber Co.	*142,000	*175,000
February 26.—By the *Tagus*=Colombia:		
J. S. Sambrada & Co.	3,000	
A. M. Capen's Sons	7,000	
Camacho, Roldau & Van Sickle	500	10,500
February 27.—By the *Momus*=New Orleans:		
Various		3,500
February 28.—By the *Panama*=Colon:		
G. Amsinck & Co.	4,000	
Dumarest Bros. & Co.	4,000	
Isaac Brandon & Bros.	6,000	
Piza, Nephews & Co.	3,000	17,000
March 1.—By the *Pretoria*=Hamburg:		
Meyer & Brown		3,700
March 1.—By *El Valle*=Galveston:		
Continental-Mexican Rubber Co.		*55,000
March 1.—By the *Esperanza*=Mexican Ports:		
Harburger & Stack	2,500	
J. W. Wilson & Co.	1,500	
Maitland, Coppell & Co.	3,000	
H. Marquardt & Co.	500	
Charles T. Wilson	12,500	20,000
March 3.—By *El Mundo*=Galveston:		
Continental-Mexican Rubber Co.		*33,500
March 3.—By the *Westerwald*=Colombia:		
Kunhardt & Co.		2,500
March 3.—By the *Vestris*=Bahia:		
J. H. Rossbach Bros. & Co.		11,500
March 4.—By the *Siraola*=Colon:		
Pablo Calvet & Co.		3,000
March 5.—By the *Prinz Joachim*=Colombia:		
Wessels, Kulenkampff & Co.	700	
Isaac Brandon & Bros.	600	
W. R. Grace & Co.	3,500	4,800
March 5.—By the *Guantanamo*=Tampico:		
Arnold & Zeiss	*52,000	
Continental-Mexican Rubber Co.	*50,000	
Ed. Maurer	*17,000	
New York Commercial Co.	*66,000	*185,000
March 6.—By the *Antilles*=New Orleans:		
Various		700
March 7.—By the *Alliance*=Colon:		
G. Amsinck & Co.	8,000	
Wessels, Kulenkampff & Co.	4,500	
Mecke & Co.	1,000	13,500
March 7.—By the *Mexico*=Mexican Ports:		
Meyer & Brown	1,000	
G. Amsinck & Co.	4,000	
E. Steiger & Co.	3,500	
Mecke & Co.	500	
Lawrence Johnson & Co.	3,000	12,000
March 7.—By the *Almirante*=Colombia:		
R. Del Castillo & Co.		2,000
March 7.—By *El Rio*=Galveston:		
Continental-Mexican Rubber Co.		*30,000
March 10.—By the *Albingia*=Colombia:		
Maitland, Coppell & Co.	2,500	
Pottberg, Ebeling & Co.	5,500	
Caballero & Blanco	1,000	9,000
March 10.—By the *Scottish Prince*=Bahia:		
Adolph Hirsch & Co.		1,500
March 10.—By the *Santiago*=Tampico:		
New York Commercial Co.		*33,500
March 10.—By *El Alba*=Galveston:		
Continental-Mexican Rubber Co.		*56,000
March 11.—By the *Creole*=New Orleans:		
Various		5,000
March 12.—By the *Kroonland*=Antwerp:		
Meyer & Brown		7,400
March 12.—By the *Oruba*=Colombia:		
G. Amsinck & Co.	1,000	
Maitland, Coppell & Co.	2,000	3,000
March 12.—By the *Colon*=Colon:		
W. R. Grace & Co.		7,500
March 12.—By the *Prinz Eitel Friedrich*=Colombia:		
J. J. Julia & Co.	2,000	
A. B. Beers	1,500	3,500
March 12.—By the *Carrillo*=Colombia:		
Isaac Brandon & Bros.		1,000
March 13.—By *El Oriente*=Galveston:		
Continental-Mexican Rubber Co.		*4,000
March 14.—By the *Santa Marta*=Colombia:		
G. Amsinck & Co.	1,700	
R. Del Castillo & Co.	1,000	2,700
March 14.—By the *President Lincoln*=Hamburg:		
Meyer & Brown		3,500
March 15.—By the *Bovic*=Liverpool:		
Adolph Hirsch & Co.	33,500	
Various	8,000	41,500
March 15.—By the *Comus*=New Orleans:		
A. N. Rotholz		2,500
March 15.—By the *Monterey*=Mexican Ports:		
General Export Commission Co.	4,000	
Maldonado & Co.	1,000	
E. Steiger & Co.	2,500	
J. W. Wilson & Co.	1,600	
Harburger & Stack	1,000	
Willard Hawes & Co.	1,500	
Charles T. Wilson	18,500	
Laurence Johnson & Co.	2,000	32,100
March 17.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Ed. Maurer	*22,500	
Various	*11,500	*34,000
March 17.—By the *Baltic*=Liverpool:		
James T. Johnstone	2,500	
Arnold & Zeiss	22,500	25,000
March 17.—By the *Altai*=Colombia:		
R. Del Castillo & Co.	800	
Pottberg, Ebeling & Co.	2,500	33,000
March 19.—By the *Prinz August Wilhelm*=Colombia:		
G. Amsinck & Co.	6,000	
Isaac Brandon & Bros.	1,200	
Heilbron Wolff & Co.	1,200	
W. R. Grace & Co.	2,500	10,900
March 20.—By the *Advance*=Colon:		
G. Amsinck & Co.	2,000	
Dumarest Bros. & Co.	600	
Camacho, Roldau & Van Sickle	1,200	
Piza, Nephews & Co.	2,200	6,000
March 22.—By the *Morro Castle*=Mexican Ports:		
Meyer & Brown	1,000	
G. Amsinck & Co.	800	
General Export Commission Co.	2,000	
E. Steiger & Co.	1,700	
W. L. Wadleigh	4,000	
Harburger & Stack	400	
Mecke & Co.	800	10,700

AFRICAN.

		Pounds.
February 24.—By the *Armenian*=Liverpool:		
James T. Johnstone	3,000	
Various	13,500	16,500
February 24.—By the *Carmania*=Liverpool:		
Various		11,200
February 24.—By the *President Grant*=Hamburg:		
Meyer & Brown	3,500	
Ed. Maurer	38,500	
Various	60,000	102,000
February 26.—By the *Canada*=Lisbon:		
Various		15,000
February 28.—By the *Victorian*=Liverpool:		
Arnold & Zeiss		33,600
March 1.—By the *Pretoria*=Hamburg:		
Ed. Maurer	5,500	
Various	15,000	20,500
March 3.—By the *Celtic*=Liverpool:		
James T. Johnstone		3,000
March 4.—By the *Lapland*=Antwerp:		
Meyer & Brown	5,000	
Arnold & Zeiss	9,000	
Ed. Maurer	6,000	20,000
March 4.—By the *Rochambeau*=Havre:		
Meyer & Brown	13,500	
Raw Products Co.	2,000	
Rubber Trading Co.	3,500	19,000
March 5.—By the *Minneapolis*=London:		
Ed. Maurer		17,000
March 7.—By the *Amerika*=Hamburg:		
Various		65,000
March 8.—By the *Pennsylvania*=Hamburg:		
General Rubber Co.	11,500	
Rubber Trading Co.	700	
Various	22,500	34,700
March 12.—By the *Kroonland*=Antwerp:		
Ed. Maurer	5,000	
Various	22,500	27,500
March 12.—By the *Minnehaha*=London:		
Various		11,200
March 14.—By the *President Lincoln*=Hamburg:		
Wallace L. Gough	15,000	
Various	10,000	25,000
March 15.—By the *Bovic*=Liverpool:		
Arnold & Zeiss	7,500	
James T. Johnstone	11,500	
Various	22,500	41,500
March 15.—By the *Chicago*=Havre:		
Arnold & Zeiss	22,500	
Rubber Trading Co.	7,500	30,000
March 17.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Meyer & Brown	17,800	
Various	5,000	22,800
March 17.—By the *Baltic*=Liverpool:		
Meyer & Brown	4,500	
Various	30,000	34,500
March 19.—By the *Zeeland*=Antwerp:		
Meyer & Brown		23,500

EAST INDIAN.

[*Denotes Plantation Rubber.]

February 24.—By the *Braunfels*=Colombo:		
Meyer & Brown	*31,000	
New York Commercial Co.	*87,000	
Ed. Maurer	*46,000	
Various	*11,000	*175,000

February 24.—By the *President Grant*—Hamburg:

Meyer & Brown	*20,500	
Various	*1,500	*22,000

February 25.—By the *Vaderland*=Antwerp:

Meyer & Brown		*29,500

February 25.—By the *Mesaba*=London:

Ed. Maurer	*11,500	
A. W. Brunn	*3,500	
Rubber Trading Co.	*3,000	
Adolph Hirsch & Co.	*3,500	
Raw Products Co.	*2,500	
Various	*60,500	*84,500

February 28.—By the *New York*=Southampton:

Ed. Maurer	*8,000	
Charles T. Wilson	*5,500	
Henderson & Korn	*33,500	*47,000

March 1.—By the *Pretoria*=Hamburg:

Various		*14,000

March 1.—By the *Egremont Castle*=Singapore:

Ed. Maurer	*55,000	
Malaysian Rubber Co.	*11,200	
L. Littlejohn & Co.	*15,000	
Wallace L. Gough Co.	*8,000	
James T. Johnstone	*8,000	
Raw Products Co.	*2,500	
Various	*50,000	
Various	*22,500	*172,200

March 4.—By the *Lapland*=Antwerp:

Meyer & Brown	*102,000	
Arnold & Zeiss	*2,000	
Ed. Maurer	*1,500	*105,500

March 5.—By the *Ryndam*=Amsterdam:

Rubber Trading Co.		*7,000

March 5.—By the *Minneapolis*=London:

Meyer & Brown	*96,500	
Ed. Maurer	*67,000	
General Rubber Co.	*85,000	
Raw Products Co.	*2,200	
Rubber Trading Co.	*2,200	
James T. Johnstone	*35,000	
Adolph Hirsch & Co.	*48,500	
Charles T. Wilson	*80,000	
Arnold & Zeiss	*35,000	
Goodyear Tire & Rubber Co.	*235,000	
William H. Stiles	*11,200	
Henderson & Korn	*30,000	*727,600

March 6.—By the *Oceanic*=Southampton:

Meyer & Brown	*11,200	
New York Commercial Co.	*45,000	
Robinson & Co.	*13,500	
Raw Products Co.	*1,500	
Rubber Trading Co.	*8,000	
Charles T. Wilson	*22,500	
Ed. Maurer	*8,000	
Henderson & Korn	*25,000	*134,700

March 7.—By the *Gutenfels*=Colombo:

Ed. Maurer		*22,500

March 7.—By the *Amerika*=Hamburg:

Various		*13,500

March 8.—By the *Pennsylvania*=Hamburg:

Meyer & Brown	*6,500	
Charles T. Wilson	*4,500	*11,000

March 12.—By the *Kroonland*=Antwerp:

Meyer & Brown		*73,000

March 12.—By the *Rotterdam*=Amsterdam:

Rubber Trading Co.	3,500	
James T. Johnstone	*2,000	5,500

March 12.—By the *Minnehaha*=London:

Meyer & Brown	*66,500	
General Rubber Co.	*80,000	
James T. Johnstone	*12,500	
Robinson & Co.	*4,500	
New York Commercial Co.	*110,000	
Arnold & Zeiss	*8,000	
William H. Stiles	*3,000	
Ed. Maurer	*11,200	
Henderson & Korn	*13,500	
Charles T. Wilson	*45,000	
Rubber Trading Co.	*8,500	*362,700

March 13.—By the *Philadelphia*=Southampton:

Meyer & Brown	*49,500	
New York Commercial Co.	*11,200	
Rubber Trading Co.	*11,200	
Raw Products Co.	*5,000	
Charles T. Wilson	*18,000	
Arnold & Zeiss	*3,500	
Ed. Maurer	*33,500	*131,900

March 13.—By the *Swazi*=Singapore:

Ed. Maurer	*23,500	
James T. Johnstone	*42,000	
L. Littlejohn & Co.	*33,500	
Malaysian Rubber Co.	*17,500	
Various	*50,000	*166,500

March 14.—By the *President Lincoln*=Hamburg:

Charles T. Wilson		*10,500

March 17.—By the *Kaiserin Auguste Victoria*=Hamburg:

Ed. Maurer		*4,500

March 17.—By the *Schuylhill*=Singapore:

Meyer & Brown	*11,200	
Ed. Maurer	*65,000	
Malaysian Rubber Co.	*28,500	
L. Littlejohn & Co.	*12,500	
General Rubber Co.	*5,500	
Various	*23,500	
Various	15,500	161,700

March 18.—By the *Minnewaska*=London:

Meyer & Brown	*90,000	
N. Y. Commercial Co.	*27,000	
Ed. Maurer	*40,000	
Robinson & Co.	*24,500	
James T. Johnstone	*22,000	
Adolph Hirsch & Co.	*18,000	
L. Littlejohn & Co.	*7,500	
Charles T. Wilson	*7,000	
General Rubber Co.	*105,000	
Henderson & Korn	*11,200	
Various	*135,000	*487,700

March 19.—By the *Zeeland*=Antwerp:

Meyer & Brown		*47,000

March 21.—By the *Majestic*=Southampton:

Arnold & Zeiss	*22,500	
Rubber Trading Co.	*17,500	
Raw Products Co.	*4,000	
Various	*22,500	*66,500

March 22.—By the *Indraghi*=Singapore:

Ed. Maurer	*80,000	
James T. Johnstone	*39,000	
Malaysian Rubber Co.	*22,500	
L. Littlejohn & Co.	*23,000	
Various	*38,500	*203,000

BOSTON ARRIVALS.

Imports in February, 1913.

	Pounds.	Values.
Gutta-Jelutong	1,896,574	$92,483
India Rubber	71,193	61,543

CUSTOM HOUSE STATISTICS.

Port of New York, February, 1913.

Imports:	Pounds.	Value.
India rubber	10,398,926	$8,082,581
Balata	153,240	73,746
Guayule	423,172	201,116
Gutta-percha	16,712	12,254
Gutta-jelutong (Pontianak)	724,512	27,845
Total	11,716,562	$8,397,542
Exports:		
India rubber	37,939	$29,303
Balata	2,512	1,884
Guayule	10,610	5,305
Gutta-percha	.....	.....
Reclaimed rubber	.....	.....
Gutta-jelutong (Pontianak)	84,030	14,963
Rubber scrap, imported	1,988,438	$167,255
Rubber scrap, exported	369,215	49,242

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR FEBRUARY, 1913 (IN KILOGRAMS).

	New York.					Europe.					Grand
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	Total.
Zarges, Berringer & Co.	146,528	19,164	169,740	26,874	362,306	400,919	115,994	51,912	174,425	743,250	1,105,556
Ad. H. Alden, Ltd.	80,457	17,097	22,082	5,565	125,201	83,266	10,663	16,500	8,986	119,415	244,616
General Rubber Co. of Brazil	131,027	19,679	77,254	3,595	231,555	38,432	10,215	4,026	46,760	99,433	330,988
J. Marques	163,296	36,721	90,528	16,873	307,418	55,225	3,269	7,122	3,311	68,927	376,345
R. O. Ahlers & Co.	9,071	.....	431	173	9,675	49,664	.....	3,720	12,014	65,398	75,073
Suarez Hermanos & Co., Ltd.	.....	.....	.....	.....	.....	181,958	8,822	10,124	82,112	283,016	283,016
De Lagotellerie & Co.	.....	.....	3,960	.....	3,960	.....	.....	.....	.....	.....	3,960
Pires Teixeira & Co.	10,030	2,040	14,190	.....	26,260	11,730	170	.....	.....	11,900	38,160
Sundry exporters	3,535	464	1,073	38	5,110	.....	.....	990	31,080	32,070	37,180
Itacoatiara, direct	.....	.....	.....	.....	.....	12,520	1,450	7,520	6,020	27,510	27,510
	543,944	95,165	379,258	53,118	1,071,485	833,714	150,583	101,914	364,708	1,450,919	2,522,404
Manáos, direct	340,428	76,070	126,538	165,919	708,955	608,281	145,915	137,106	444,517	1,335,819	2,044,774
Iquitos, direct	4,660	.....	691	2,487	7,838	.....	.....	.....	.....	.....	7,838
Total, February, 1913	889,032	171,235	506,487	221,524	1,788,278	1,441,995	296,498	239,020	809,225	2,786,738	4,575,016
Total, January, 1913	890,963	147,800	747,191	315,644	2,101,598	1,295,806	190,907	223,030	744,224	2,453,967	4,555,565

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR FEBRUARY, 1913 (IN KILOGRAMS).

	New York.					Europe.					Grand
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	Total.
Zarges, Ohliger & Ca.	126,139	3,355	42,846	10,474	182,814	279,328	57,814	45,775	229,152	612,069	794,883
Adelbert H. Alden, Ltd.	157,030	55,307	53,154	20,885	286,376	18,770	3,910	2,641	27,083	52,404	338,780
General Rubber Co. of Brazil	27,479	21	23,883	62,096	113,479	63,433	21,367	10,947	65,133	160,880	274,359
Ahlers & Ca.	147,238	27,205	49,313	75,937	299,693	121,403	27,198	31,956	58,798	239,355	539,048
De Lagotellerie & Co.	10,880	.....	.....	.....	10,880	97,862	29,463	30,516	36,355	194,196	205,076
Semper & Co.	.....	.....	.....	.....	.....	7,840	1,120	1,940	.....	10,900	10,900
Sociedade Anonyma (Armazens Andresen)	.....	.....	.....	.....	.....	16,000	4,960	7,260	150	28,370	28,370
W. Peters & Co.	9,167	13,094	3,706	30,180	56,147	.....	.....	2,430	150	2,580	58,727
Sundry	.....	.....	.....	.....	.....	3,485	243	3,641	27,746	35,115	35,115
	477,933	98,982	172,902	199,572	949,389	608,121	146,075	137,106	444,567	1,335,869	2,285,258
Iquitos, direct	4,660	.....	691	2,487	7,838	.....	.....	.....	.....	.....	7,838
Total, February, 1913	482,593	98,982	173,593	202,059	957,227	608,121	146,075	137,106	444,567	1,335,869	2,293,096
Total, January, 1913	472,818	77,126	217,249	166,875	934,068	658,309	126,008	137,093	481,836	1,403,246	2,337,314

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Antwerp.

RUBBER STATISTICS FOR FEBRUARY.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, Jan. 1.....*kilos*	463,752	586,056	645,419	482,162	597,777
Arrivals in February—					
Congo sorts	197,713	331,775	172,078	454,116	184,360
Other sorts	5,818	16,781	18,621	43,047	98,260
Plantation sorts	145,907	117,747	45,617	17,461	17,391
Aggregating	813,190	1,052,359	881,735	996,786	897,788
Sales in February.....	251,901	530,403	342,528	480,252	566,355
Stocks, February 28....	561,289	521,956	539,207	516,534	331,433
Arrivals since Jan. 1—					
Congo sorts	519,320	558,023	575,499	656,663	370,549
Other sorts	18,463	22,976	100,835	48,703	164,419
Plantation sorts	284,212	206,737	109,938	71,125	48,998
Aggregating	821,995	787,736	786,272	776,491	583,966
Sales since January 1..	771,766	940,518	835,277	801,469	848,268

RUBBER ARRIVALS FROM THE CONGO.

MARCH 12.—By the steamer *Leopoldville:*

Bunge & Co.....	(Société Générale Africaine) *kilos*	33,500	
do	(Chemins de fer Grande Lacs)	800	
do	(Belgika)	2,900	
do	(Alberta)	2,900	
do	(Cie du Kasai)	93,000	
do	(Forminière)	3,600	
do		500	
Société Coloniale Anversoise.....	(Haut Congo)	950	
do	(Lomami)	6,260	
L. & W. Van de Velde.....	(Comfina)	20,700	
do	(Velde)	4,760	
do		1,900	
Charles Dethier	(American Congo Co.)	2,000	
do	(Comminiere)	4,600	
Willaert Freres		5,000	
Divers		13,500	196,870

Plantation Rubber From the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

[From January 1 to February 24, 1913. Compiled by the Ceylon Chamber of Commerce.]

	1912.	1913.
To Great Britain .....*pounds*	1,051,839	1,597,373
To United States	653,869	1,084,023
To Belgium	284,483	271,934
To Australia	11,681	47,839
To Japan	2,181	27,764
To Germany	14,096	16,232
To Austria	2,392	12,860
To Italy	.....	8,108
To Canada	10,482	.....
To Norway and Sweden.....	39	.....
Total	2,031,062	3,066,133

The export Figures of Rubber for 1913 given in the above table include the imports re-exported. (These amount to 382,419 lbs.—263,778 lbs. from the Straits and 118,641 lbs. from India.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to December 31, 1912, corrected. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To	Singapore.	Penang	Port Swettenham.	Total
Great Britain, pounds	10,620,830	9,401,608	17,037,067	37,059,505
Continent	365,343	26,663	2,311,717	2,703,723
Japan	522,058	.....	.....	522,058
Australia	89,139	.....	.....	89,139
Ceylon	2,217	255,627	903,404	1,161,248
United States	3,050,120	933	2,081	3,053,134
Total, 1912.....	14,649,707	9,684,831	20,254,269	44,588,807
Total, 1911.....	6,589,425	5,254,931	12,109,788	23,954,144
Total, 1910.....	3,764,877	2,454,907	8,349,523	14,569,307
Total, 1909.....	2,412,617	2,088,133	2,960,320	7,461,070